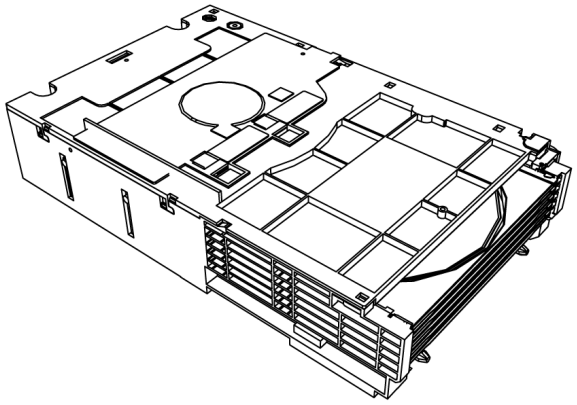
ORDER NO. MD0801004CE
A6

Service Manual

Mechanism Unit

CR14



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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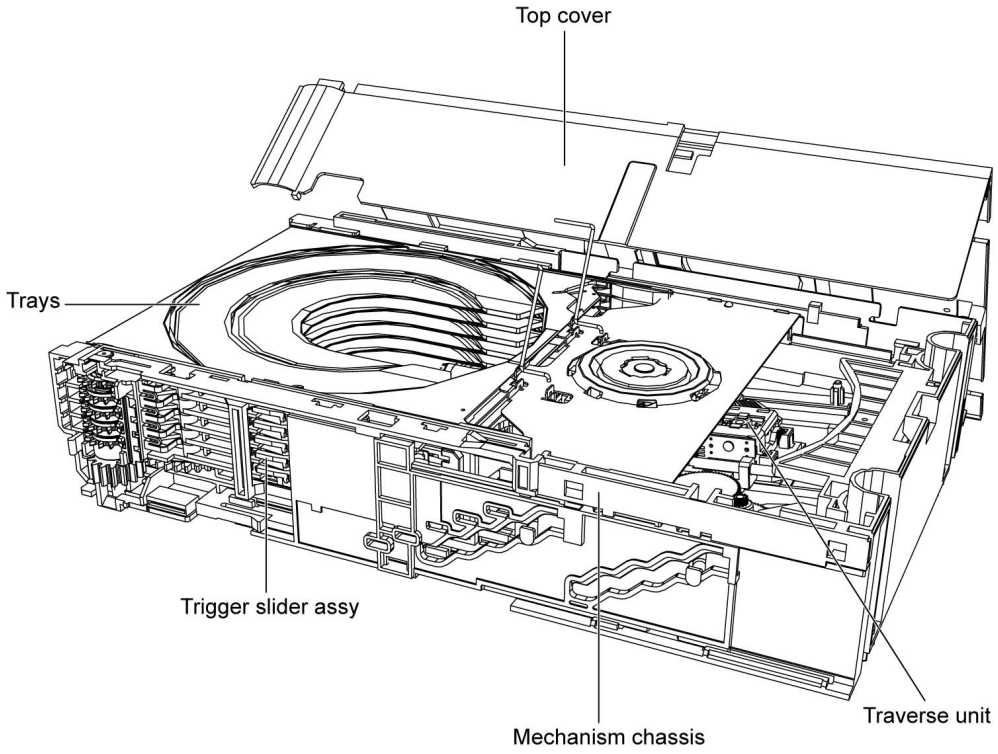
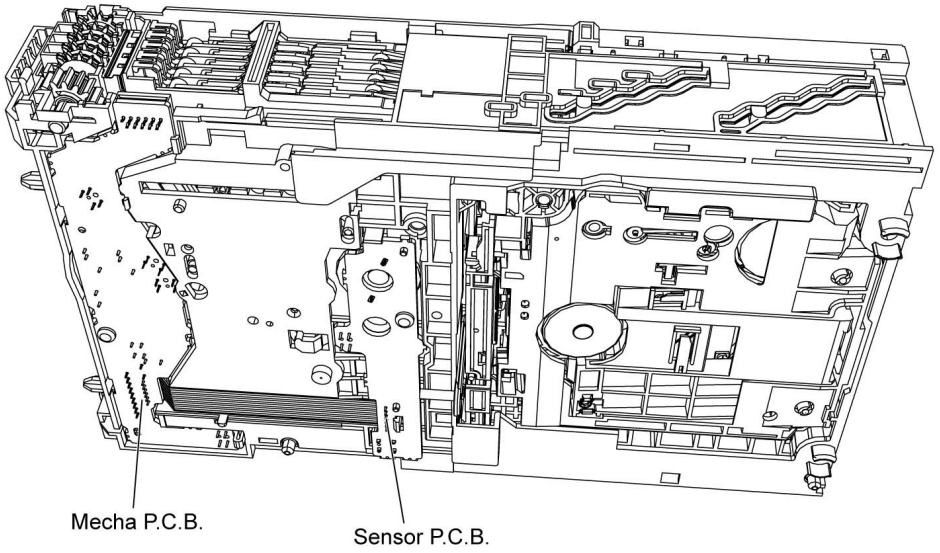
1 Mechanism Overview





2 Prevention of Electrostatic Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution:

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

3 Precaution of Laser Diode

CAUTION:
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

CAUTION :

This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.
Wavelength: 655 nm (DVD)/785 nm (CD)
Maximum output radiation power from pickup: 100 µW/VDE

Laser radiation from the pickup unit is safety level, but be sure the followings:

1. Do not disassemble the pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

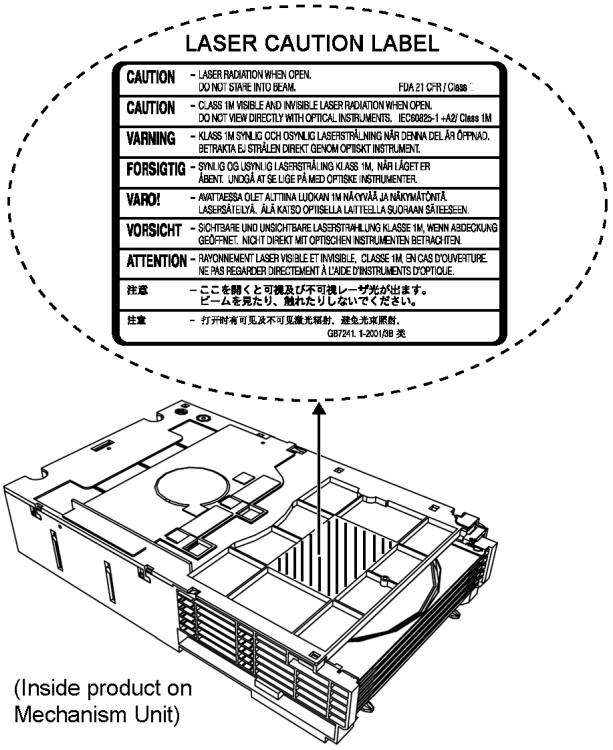
ACHTUNG :

Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheitadgestrahit.

Wellenlänge: 655 nm (DVD)/785 nm (CD)
Maximale Strahlungsleistung der Lasereinheit: 100 µW/VDE

Die strahlungan der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werksseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.


LASER CAUTION LABEL
CAUTION - LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. FDA 21 CFR / Class
CAUTION - CLASS 1M VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS. IEC60825-1 +A2/ Class 1M
VARNING - KLASS 1M SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRAKTA EJ STRÅLEN DIREKT GENOM OPTISKT INSTRUMENT.
FORSIGTIG - SYNLIG OG USYNLIG LASERSTRÅLING KLASSE 1M, NÅR LÅGET ER ÅBENT. UNDGÅ AT SE LIGE PÅ MED OPTISKE INSTRUMENTER.
VARO! - AVATTAESSA OLET ALTTIINA LUOKAN 1M NÄKYVÄÄ JA NÄKYMÄTÖNTÄ LASERSÄTEILYÄ. ÄLÄ KATSO OPTISELLA LAITTEELLA SUORAAN SÄTEESEEN.
VORSICHT - SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG KLASSE 1M, WENN ABDECKUNG GEÖFFNET. NICHT DIREKT MIT OPTISCHEN INSTRUMENTEN BETRACHTEN.
ATTENTION - RAYONNEMENT LASER VISIBLE ET INVISIBLE, CLASSE 1M, EN CAS D'OUVERTURE. NE PAS REGARDER DIRECTEMENT À L'AIDE D'INSTRUMENTS D'OPTIQUE.
注意 - ここを開くと可視及び不可視レーザ光が出ます。ビームを見たり、触れたりしないでください。
注意 - 打开时有可见及不可见激光辐射，避免光束照射。
GB7241.1-2001/8B 类
(Inside product on Mechanism Unit)

4 About Lead Free Solder (PbF)

4.1. Service caution based on legal restrictions

4.1.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30 degrees C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of “PbF” is printed either foil side or components side on the PCB using the lead free solder. (See right figure)	PbF

Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.
  (Definition: The letter of “PbF” is printed on the PCB using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30 degrees C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
  RFKZ03D01K----------(0.3mm 100g Reel)
  RFKZ06D01K----------(0.6mm 100g Reel)
  RFKZ10D01K----------(1.0mm 100g Reel)

Note

* Ingredient: tin (Sn), 96.5%, silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

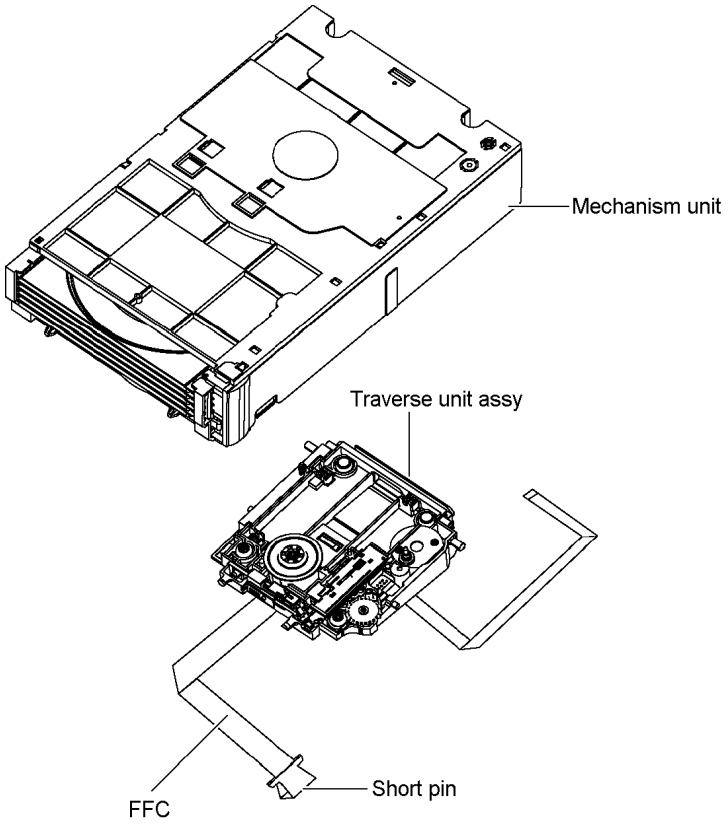
5 Handling Precautions for Traverse Unit

The laser diode in the optical pickup unit may break down due to static electricity of clothes or human body. Special care must be taken avoid caution to electrostatic breakdown when servicing and handling the laser diode in the traverse unit.

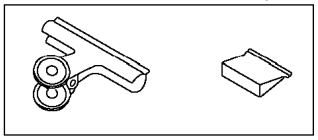
5.1. Cautions to Be Taken in Handling the Optical Pickup Unit

The laser diode in the optical pickup unit may be damaged due to electrostatic discharge generating from clothes or human body. Special care must be taken avoid caution to electrostatic discharge damage when servicing the laser diode.

1. Do not give a considerable shock to the optical pickup unit as it has an extremely high-precise structure.
2. To prevent the laser diode from the electrostatic discharge damage, the flexible cable of the optical pickup unit removed should be short-circuited with a short pin or a clip.
3. The flexible cable may be cut off if an excessive force is applied to it. Use caution when handling the flexible cable.
4. The antistatic FPC is connected to the new optical pickup unit. After replacing the optical pickup unit and connecting the flexible cable, cut off the antistatic FPC.



[Caution]
Ground the cable with a clip or a short pin.



Clip or Short Pin

5.2. Grounding for electrostatic breakdown prevention

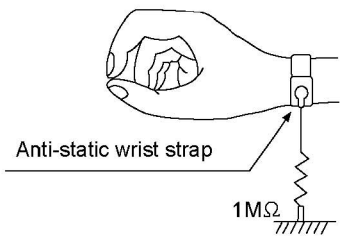
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

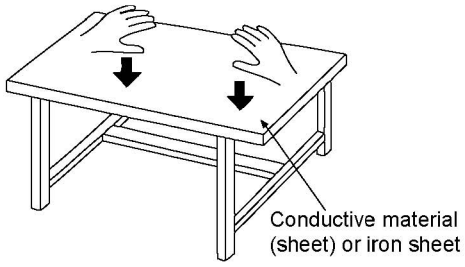
5.2.1. Worktable grounding

1. Put a conductive material (sheet) or iron sheet on the area where the optical pickup is placed, and ground the sheet.

5.2.2. Human body grounding

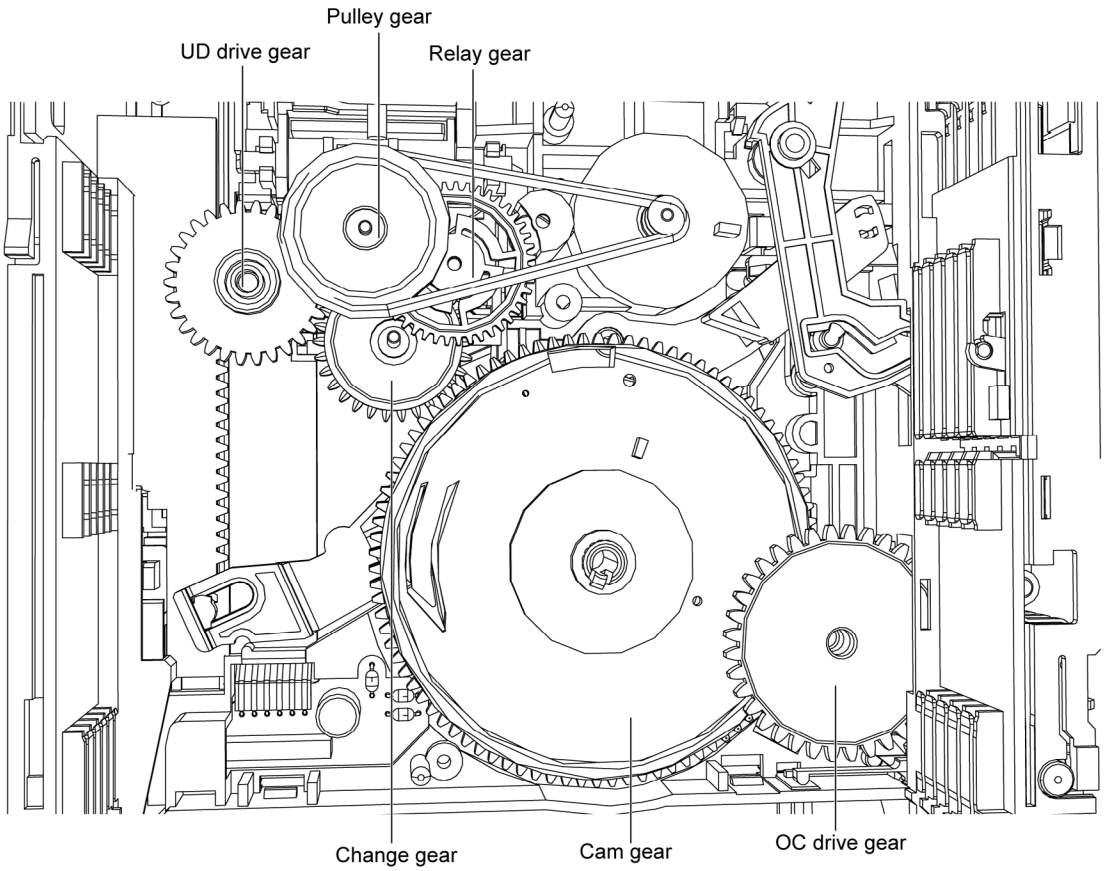
1. Use the anti-static wrist strap to discharge the static electricity form your body.

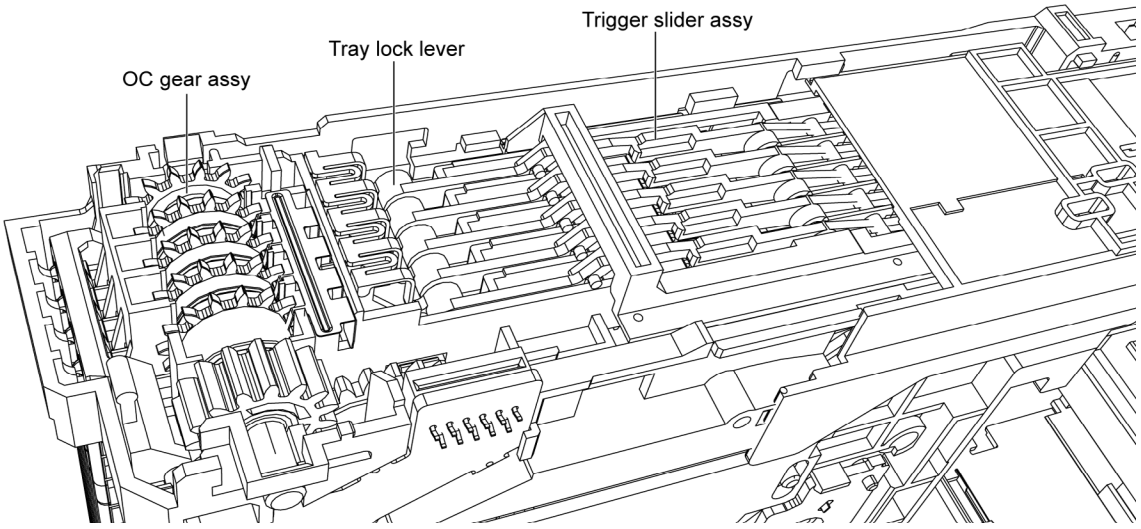

Anti-static wrist strap
1MΩ


Conductive material
(sheet) or iron sheet

6 Mechanism Drive Unit

6.1. Description of trays open/close and discs exchange operations

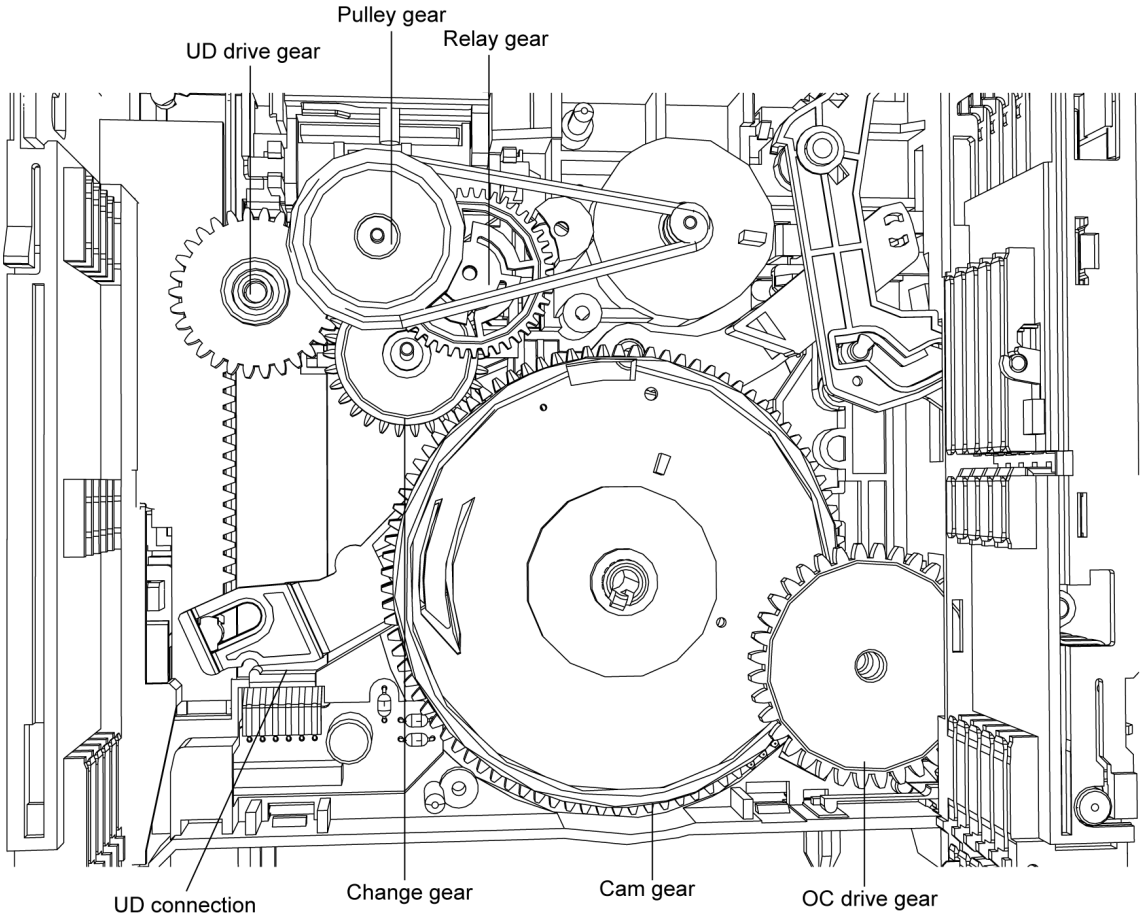


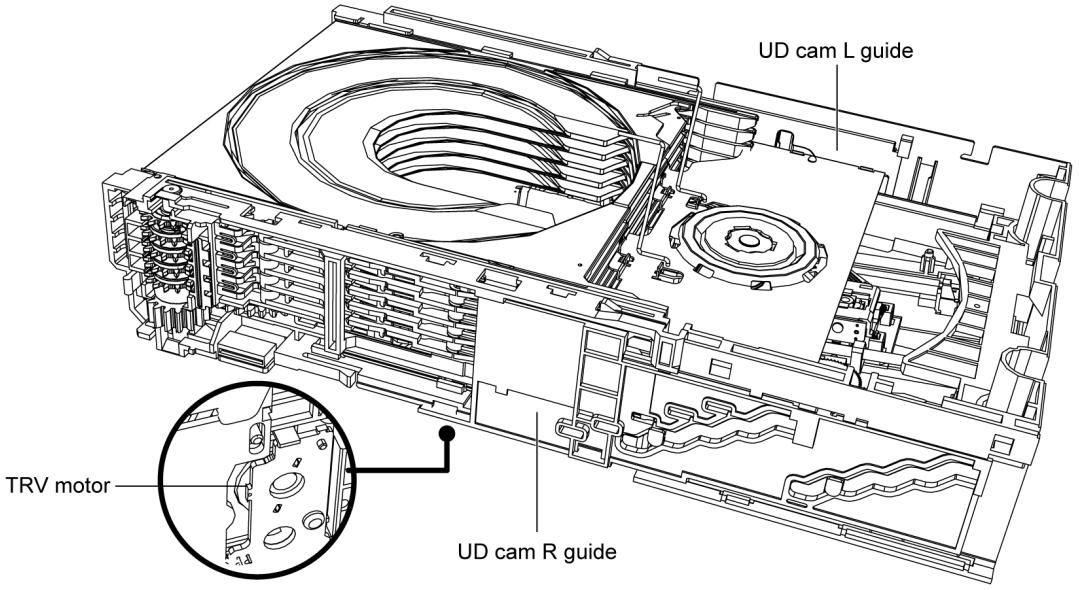


1. The loading motor turns in the clockwise direction and the rotation is transmitted via the belt, the pulley gear also turns clockwise.
2. The relay gear turns counter clockwise.
3. The change gear turns clockwise.
4. The cam gear turns counter clockwise.
5. The OC drive gear turns clockwise driven OC gear assy.
6. Trigger slide assy releases tray lock lever.
7. Movement of OC gear assy releases all trays.

(The operation of trays closed is the opposite of that for opening trays. Discs exchange is done during closing operation.)

6.2. Description of tray selection operation





1. The loading motor turns in the clockwise direction and the rotation is transmitted via the belt, the pulley gear also turns clockwise.

2. The relay gear turns counter clockwise.

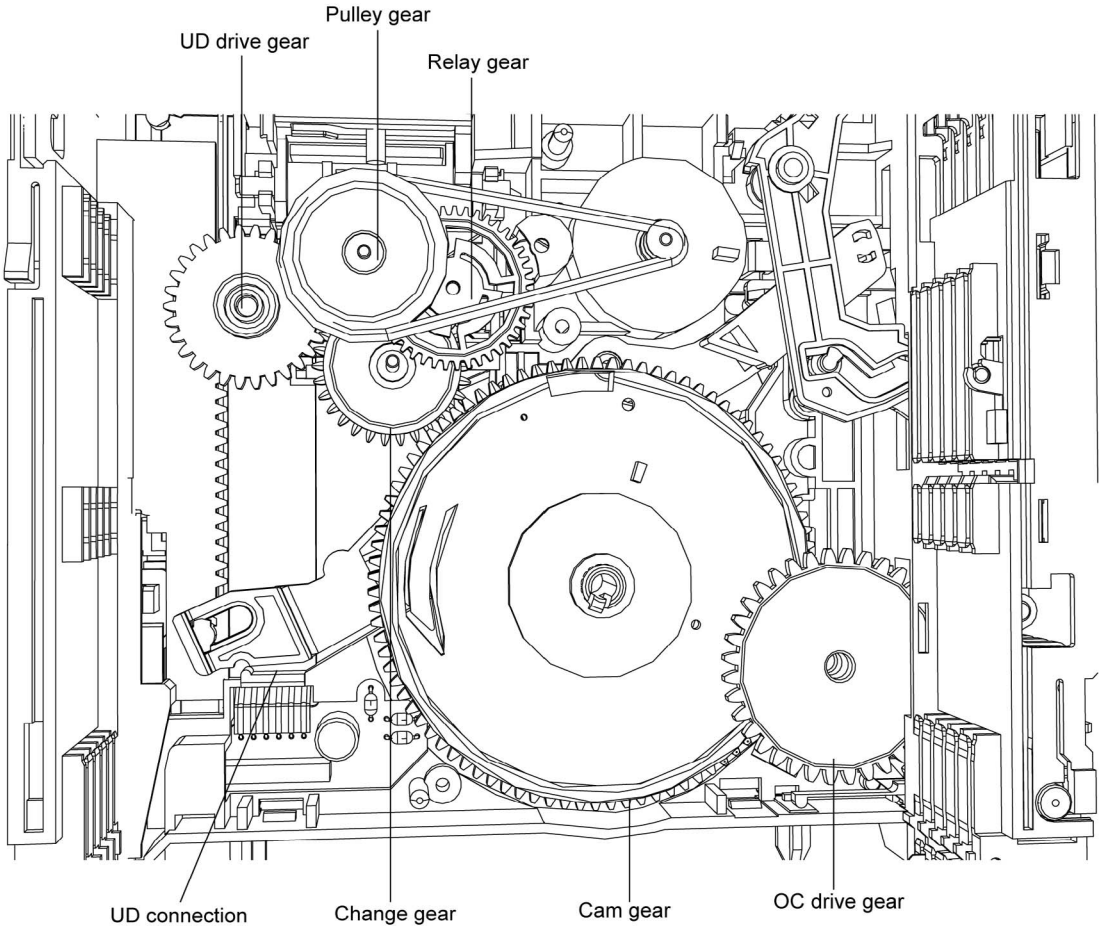
3. The change gear turns clockwise.

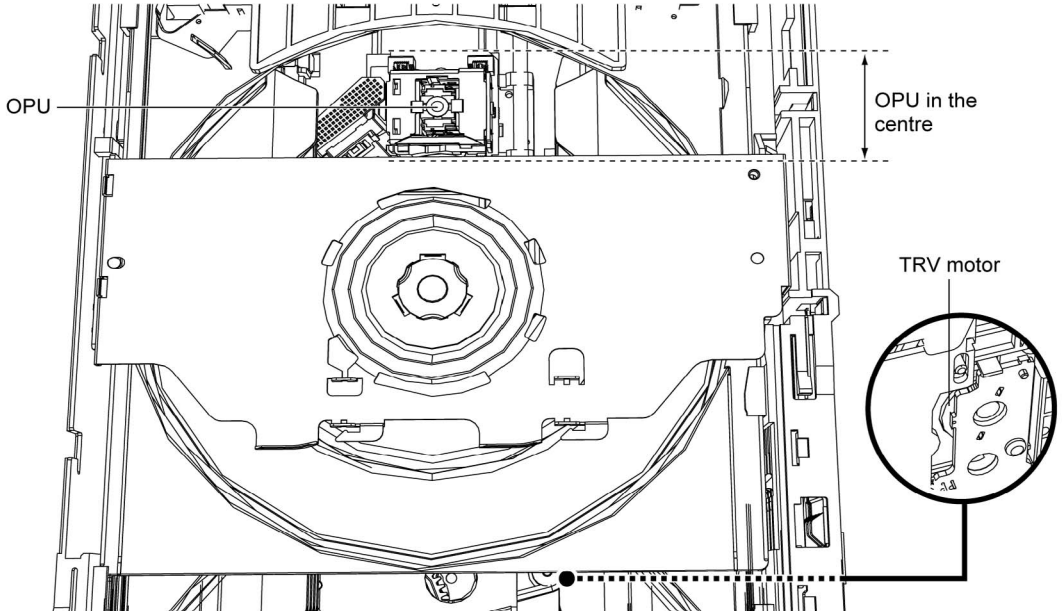
4. The cam gear turns counter clockwise.

5. The UD drive gear turns counter clockwise engages UD cam L guide drives UD connection turns counter clockwise, UD cam R guide is driven to move UD base unit down.

(The operation of the UD base unit up is the opposite of that for the UD base unit down.)

6.3. Description of play operation





1. The loading motor turns in the clockwise direction and the rotation is transmitted via the belt, the pulley gear also turns cloc
2. The relay gear turns counter clockwise.
3. The change gear turns clockwise.
4. The cam gear turns counter clockwise.
5. Turn the TRV motor clockwise, the tray will load into play position until OPU at the centre position.

7 Mechanism Operations Description

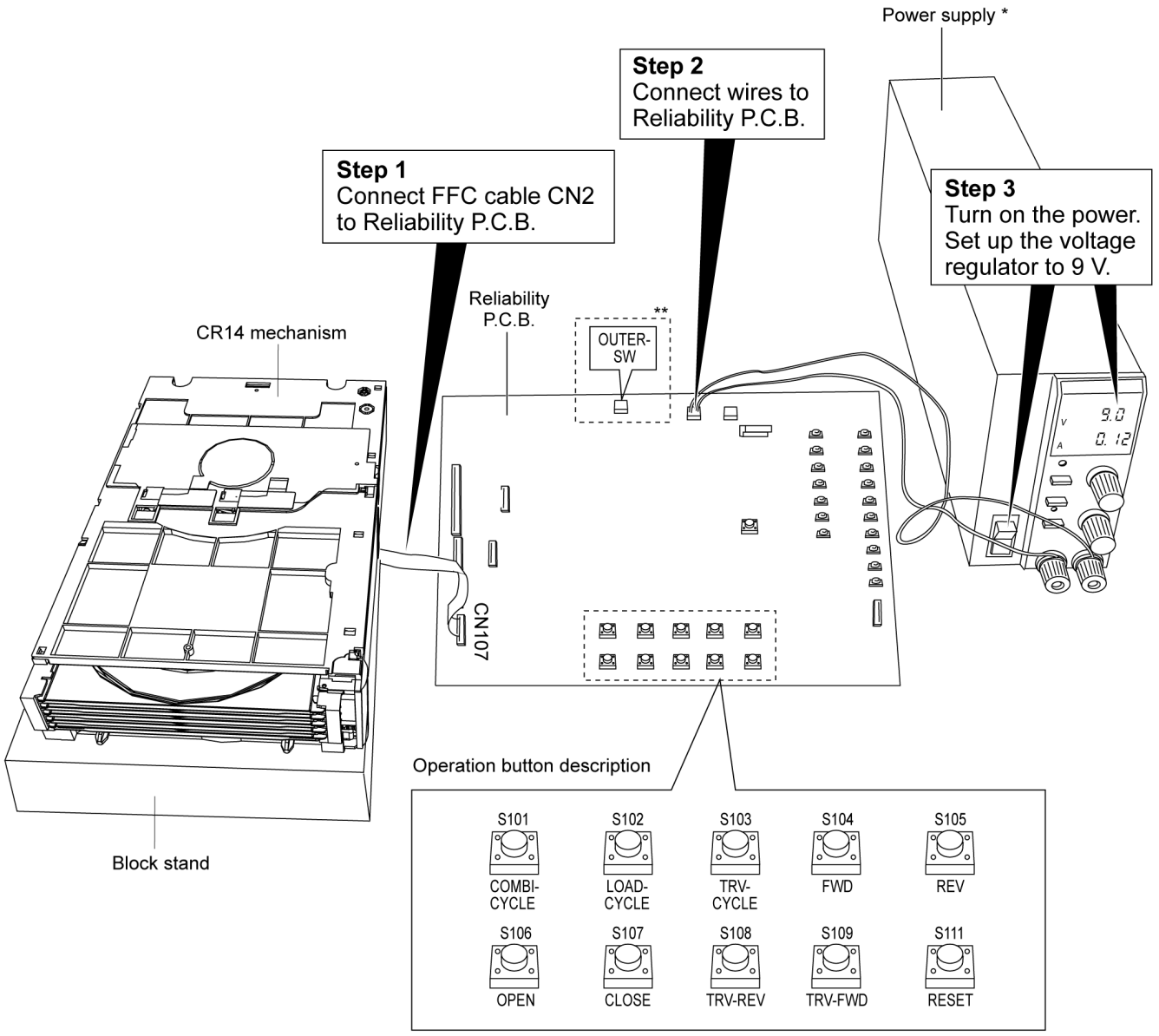
This section is not available at the time of issue.

8 CR14 Mechanism Reliability

Purpose: To test the CR14 mechanism unit operation by using the Reliability P.C.B. before installation into the main unit.

8.1. Setup Connection

Below diagram shows the set-up necessary to carry out the reliability of mechanism.



* Non-supply

** Please refer to (Section 8.2) for more information.

Equipments required for the set up preparation:

- Power supply
- Reliability P.C.B. (RFKZCR14)

8.2. Jig's Flow Diagram

Button	Operation description	Mecha mode	Switch state		
				INNER	OUTER
Open (S106)	[Normal Operation] TRV motor turns CCW and stop when UNLOAD-SW = Signal change from H-->L (Refer Figure 1 for flow)	Open position	L	L	H
Close (S107)	[Normal Operation] TRV motor turns CW and stop when INNER-SW = Signal change from L-->H (Refer Figure 2 for flow)	Close Position	H	H	H
Trv FW (S109)	[Normal Operation] TRV motor turns CCW and stops when INNER-SW = Signal change from H-->L (Refer Figure 3 for flow)	OPU Inner position	H	L	H
Trv REV (S108)	[Normal Operation] TRV motor turns CW and stops when OUTER-SW = Signal change from H-->L (Refer Figure 4 for flow)	OPU Outer position	H	H	L
FWD (S104)	[Manual mode] TRV motor turns CCW and stops when user release button (Refer Figure 5 for flow)	Manual mode Trv motor FW	~	~	~
REV (S105)	[Manual mode] TRV motor turns CW and stops when user release button (Refer Figure 6 for flow)	Manual mode Trv motor Rev	~	~	~
Combi cycle (S101)	[Aging Mode-1] Mechanism in continuous cycle mode of combination betweer Loading and Traverse function. (Refer Figure 7 for flow)	Mode-1	~	~	~
Load cycle (S102)	[Aging Mode-2] Mechanism in continuous cycle mode of Loading function. (Refer Figure 8 for flow)	Mode-2	~	~	~
Trv cycle (S103)	[Aging Mode-3] Mechanism in continuous cycle mode of Traverse function. (Refer Figure 9 for flow)	Mode-3	~	~	~

8.2.1. Flow operation

Normal Operation , Manual , Initialization

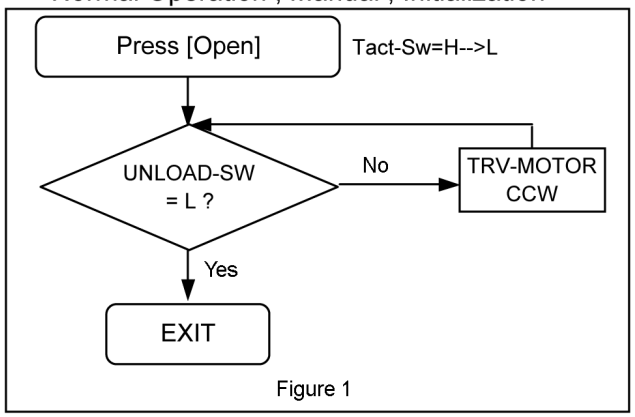


Figure 1

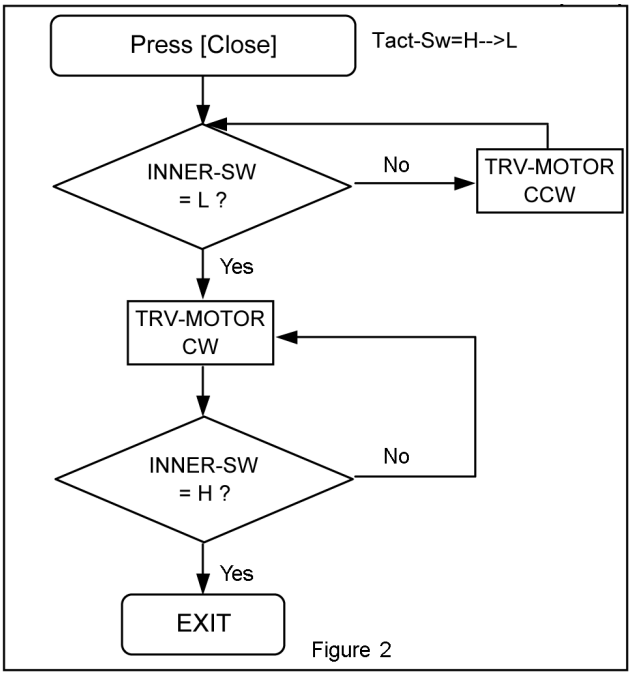


Figure 2

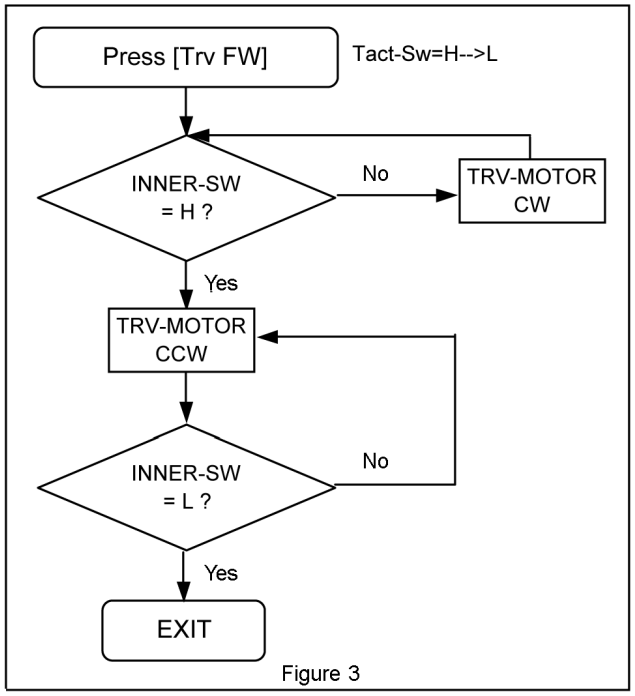


Figure 3

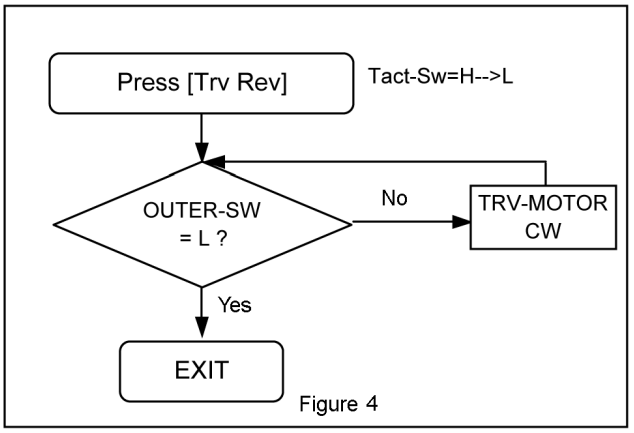


Figure 4

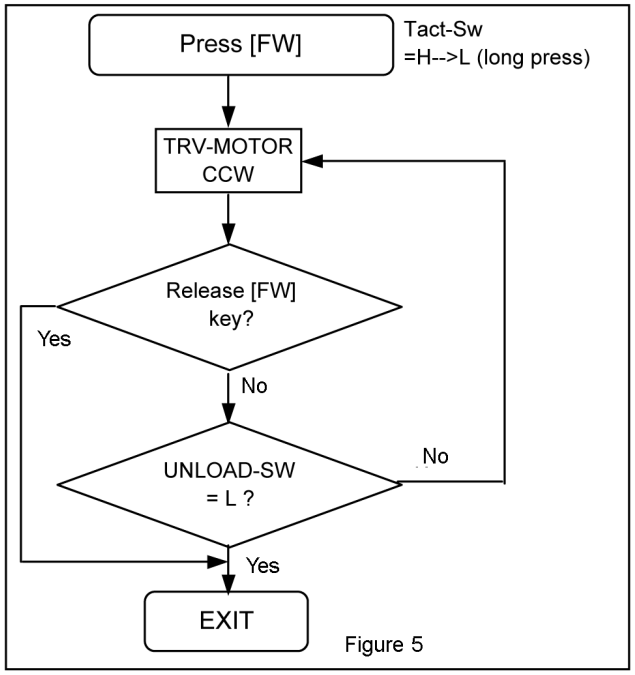


Figure 5

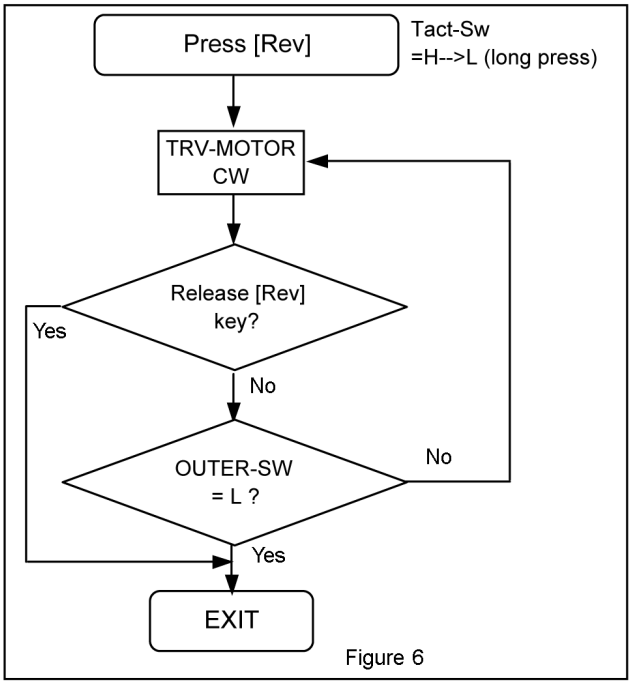


Figure 6

Aging

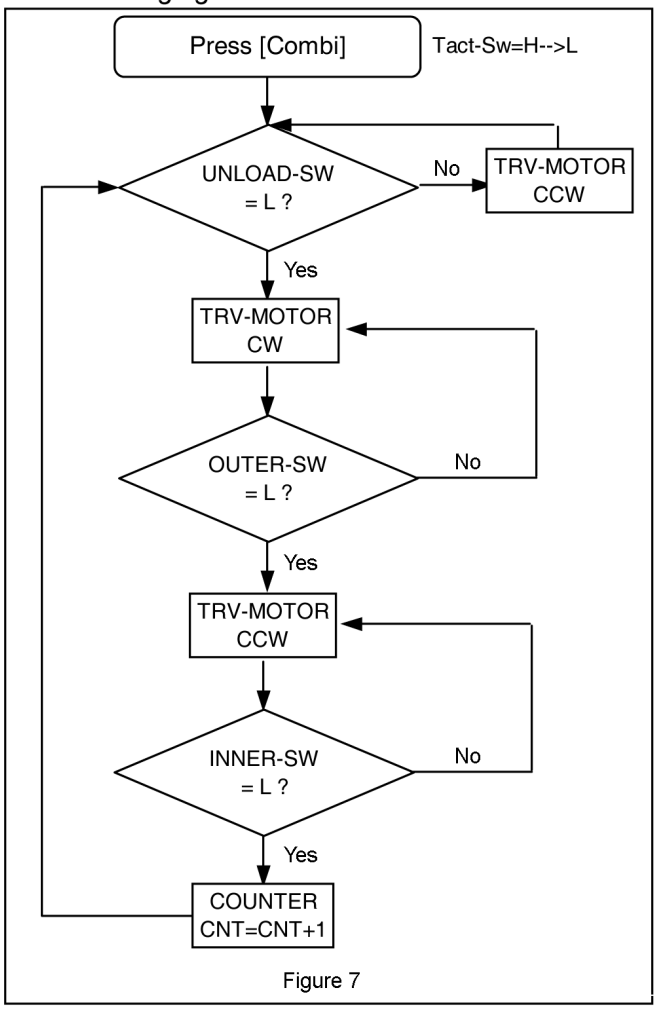


Figure 7

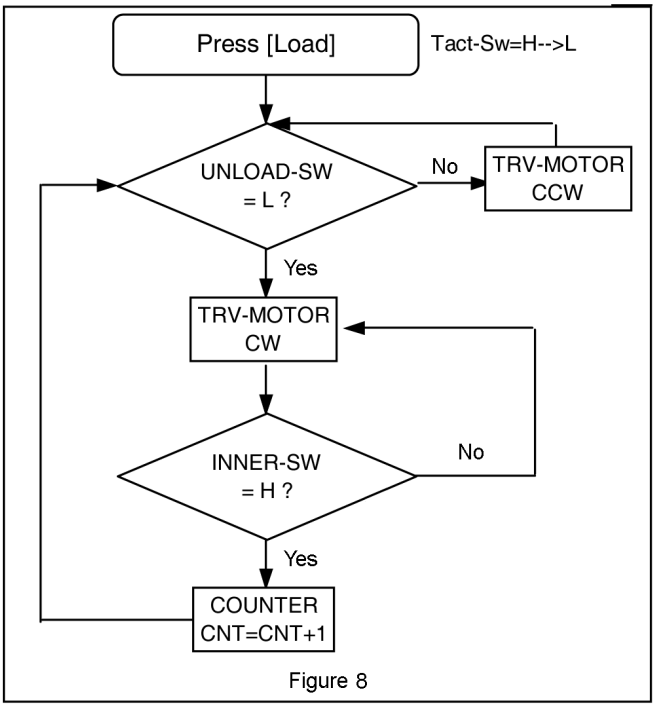


Figure 8

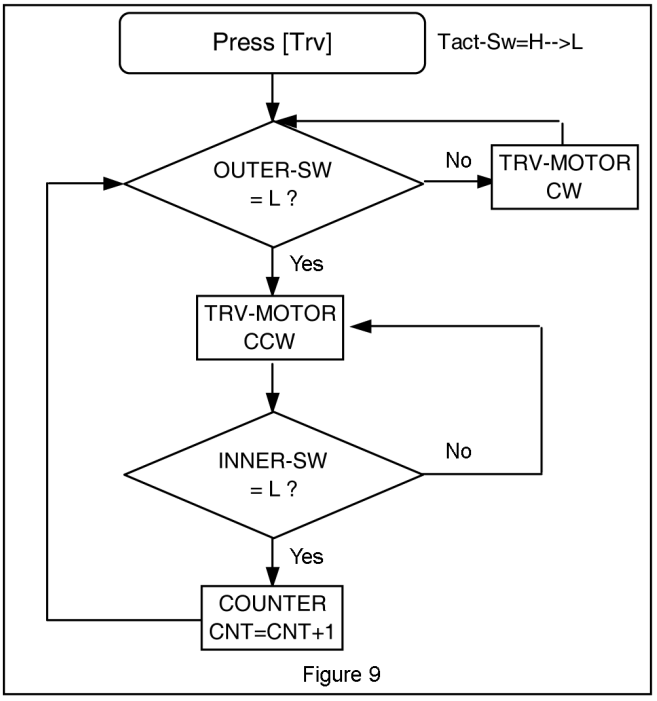


Figure 9

9 Before Disassembly

9.1. Using Service Modes (Main Unit)

9.1.1. In Service Mode 1

Purpose:

All trays in “STOCK” position, UD base unit at tray 5 position.

Refer to Section 10.2 for disassembling of Mechanism unit.

Procedures:

- Press and hold “STOP” button followed by “FORWARD” button to enter TEST mode.
- Press [1] button on main unit to enter Service Mode 1.

9.1.2. In Service Mode 2

Purpose:

In “PLAY” position, OPU at the centre position (see section 6.3 for more information).

Refer to Section 10.1 for disassembling of Traverse unit assy.

Procedures:

- Press and hold “STOP” button followed by “FORWARD” button to enter TEST mode.
- Press [2] button on main unit to enter Service Mode 2.

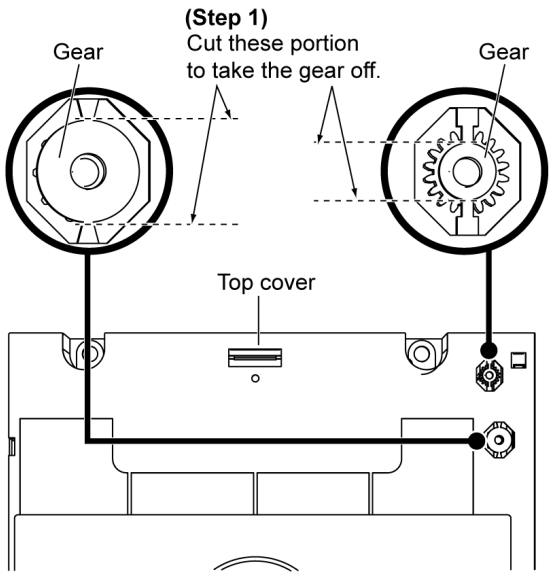
9.2. Using Manually

- **Preparation of service jig**

- This unit has two gears which are used for checking items (open/close of tray, up/down operation of traverse unit by manually) when servicing. (For gear information, that is described on the items for disassembly procedures.)

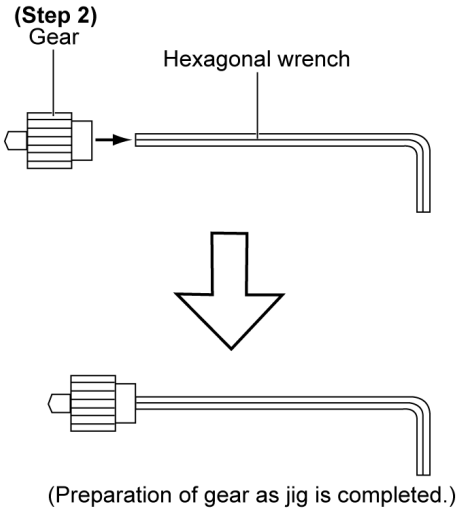
- For preparation of gear (for servicing), perform the procedures as follows.

- In case of re-servicing the same set, the “gear for servicing” may be took off because it had been used. So, the “gear for servicing” must be stored.



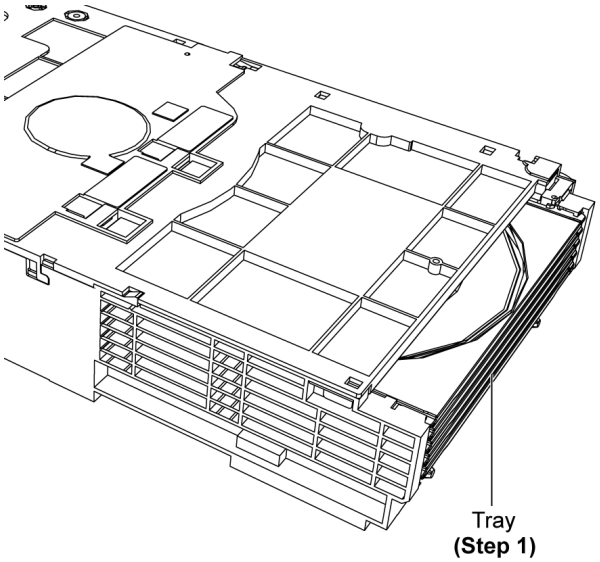
Step 1: Cut the gear out from the top cover.

Note: The bigger gear is for loading hole and the smaller gear is for traverse hole.



Step 2: Insert the gear into the hexagonal wrench.

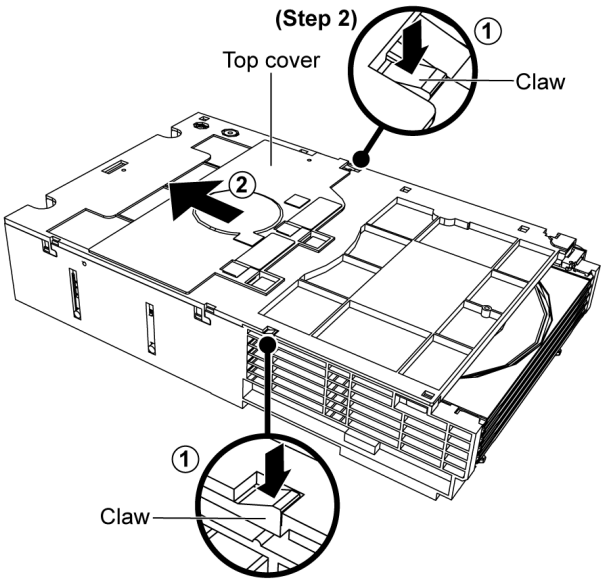
9.2.1. Manually set to “UD” position



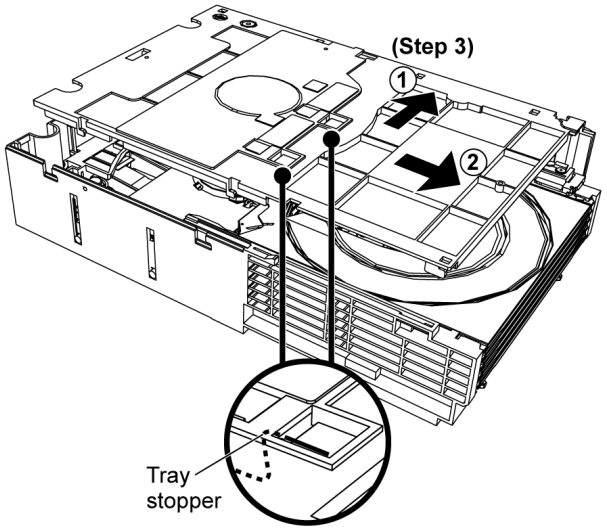
Step 1: Check any missing tray at the mechanism front.

Caution:

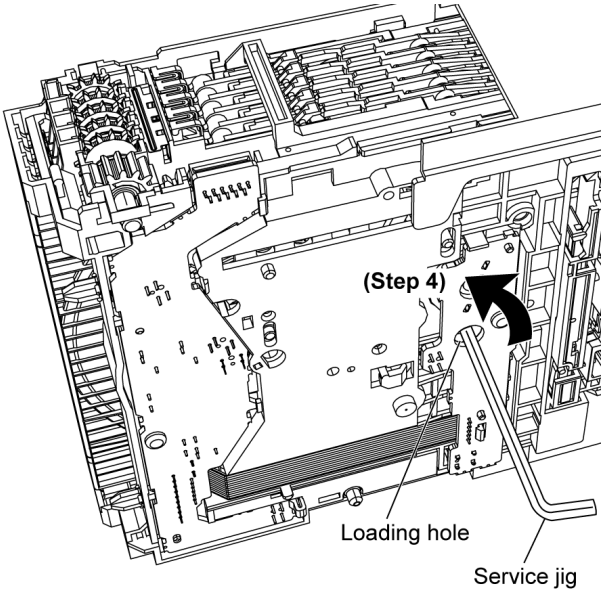
The missing tray is engaged in the play position.



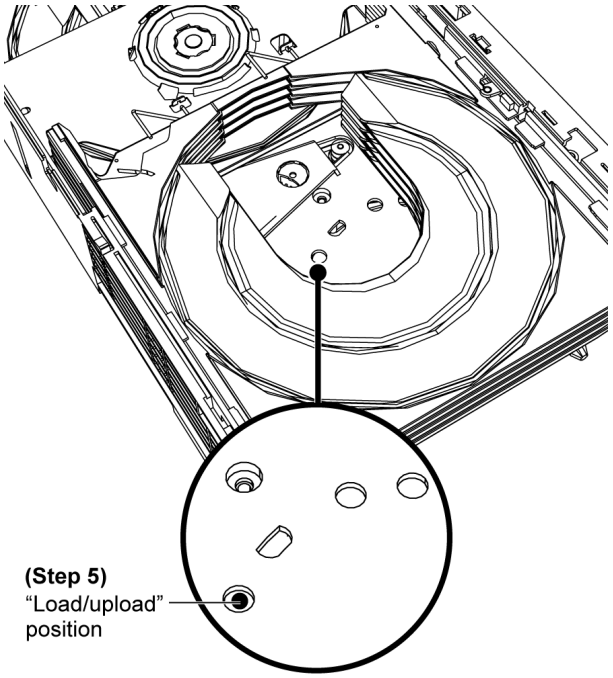
Step 2: Press both claws at the sides as arrows shown and push the top cover backwards.



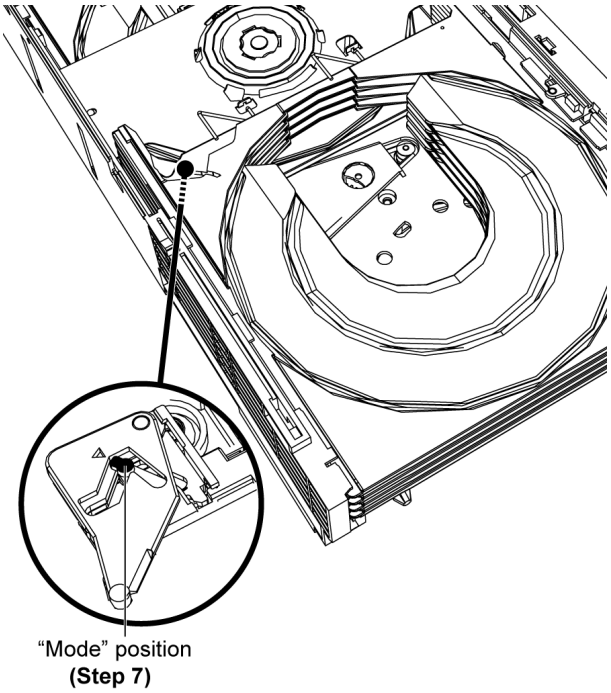
Step 3: Remove the top cover as arrows shown to release the tray stoppers.



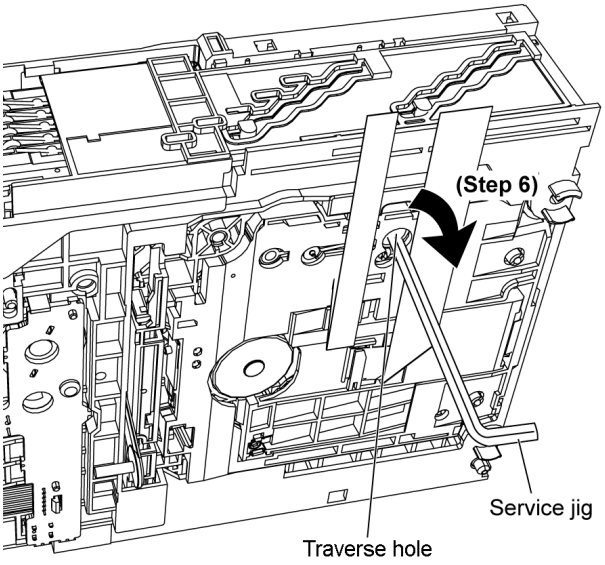
Step 4: Insert service jig into the loading hole, rotate the gear counter clockwise.



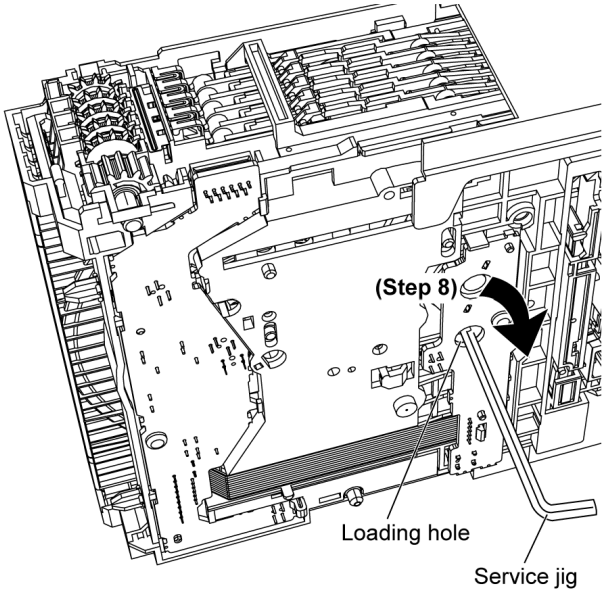
Step 5: Rotate the gear to "Load/upload" position.



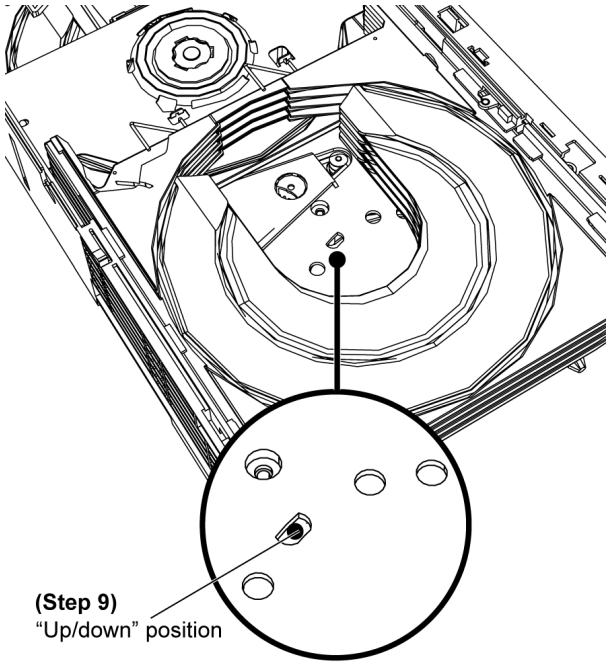
Step 7: Rotate the gear to "Mode" position.



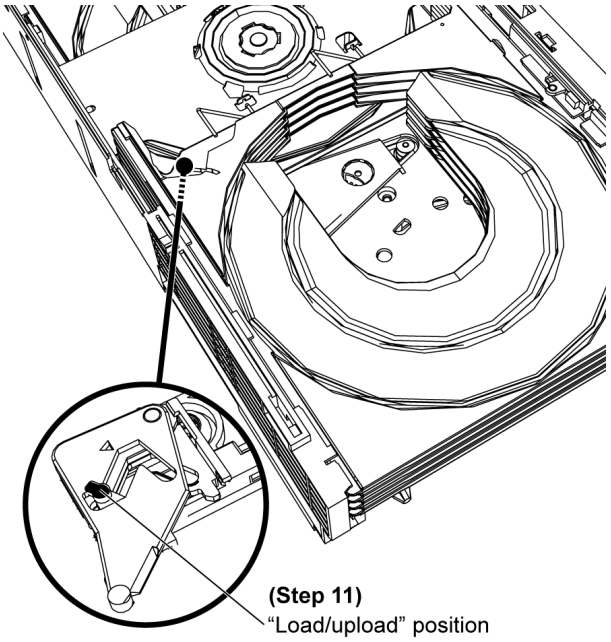
Step 6: Insert service jig into the traverse hole, rotate the gear clockwise.



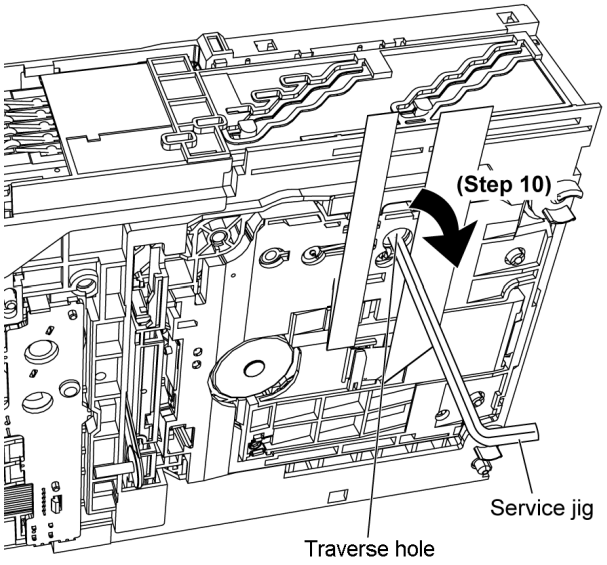
Step 8: Insert service jig into the loading hole, rotate the gear clockwise.



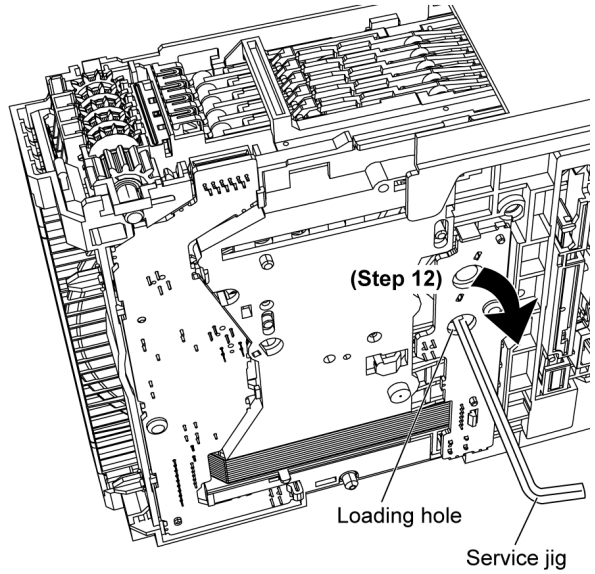
Step 9: Rotate the gear to “Up/down” position.

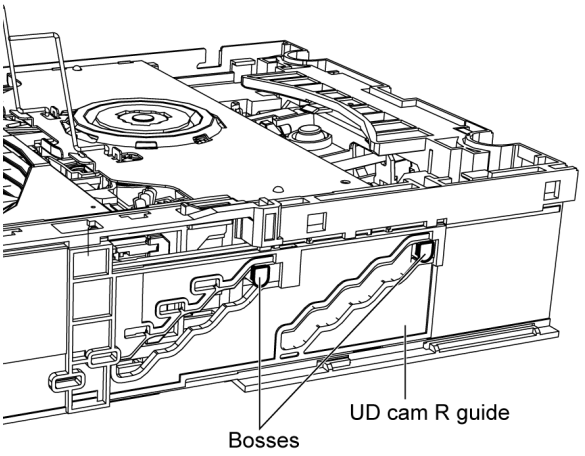


Step 11: Rotate the gear to “Load/upload” position.



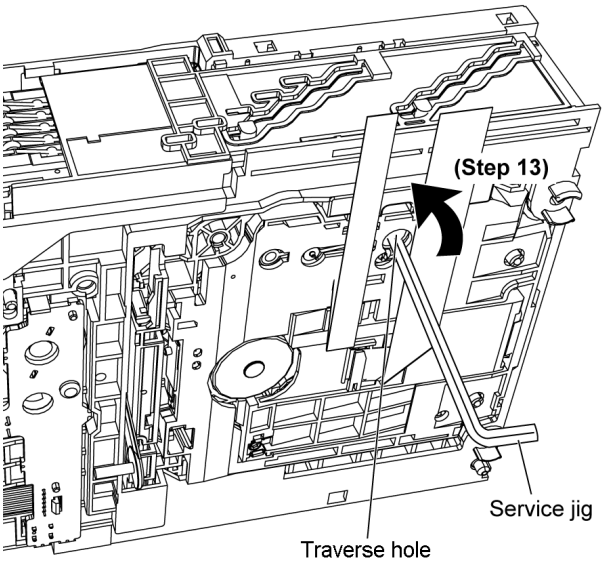
Step 10: Insert service jig into the traverse hole, rotate the gear clockwise.



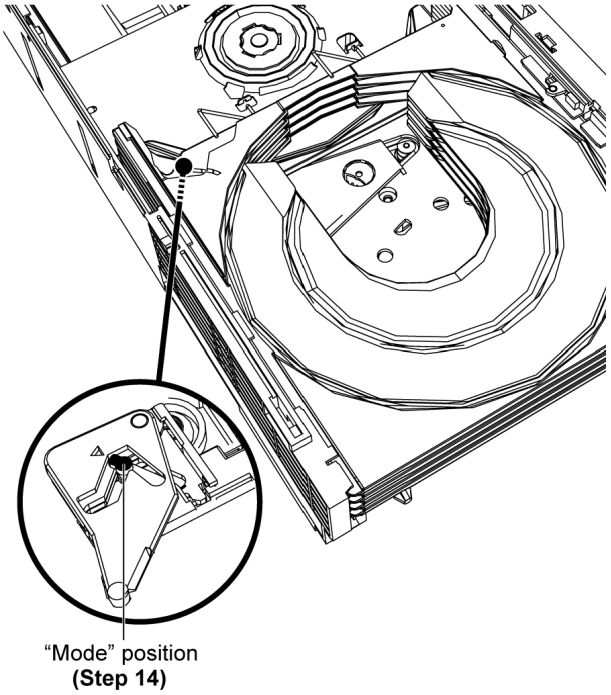


Step 12: Insert service jig into the loading hole, rotate the gear

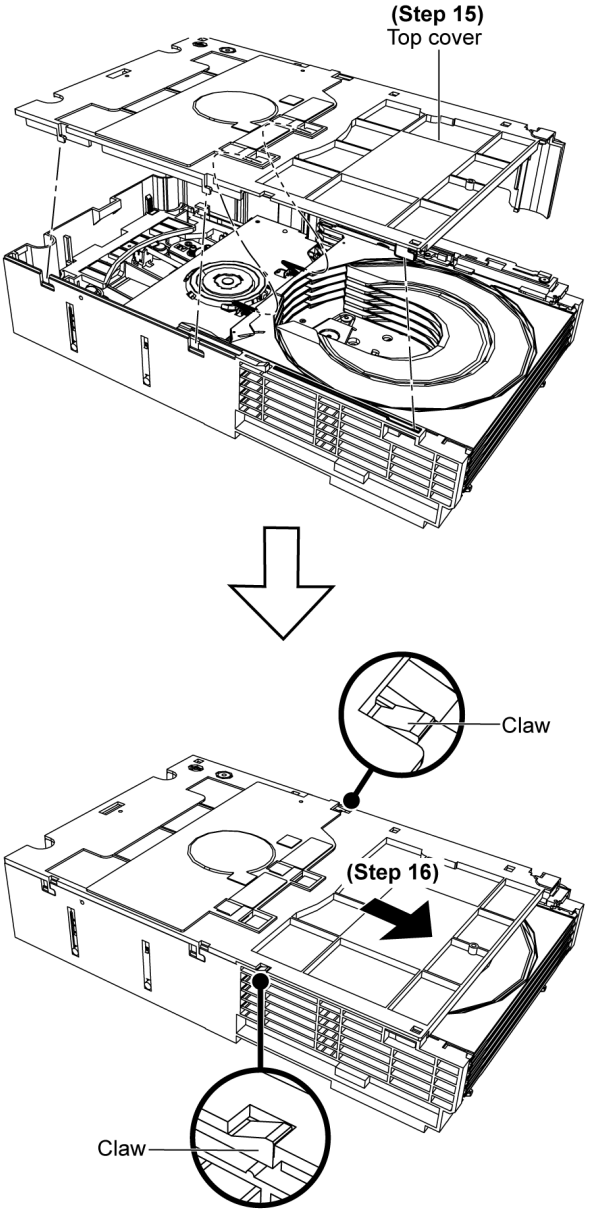
clockwise until both bosses positioned at the top of the UD cam R guide.



Step 13: Insert service jig into the traverse hole, rotate the gear counter clockwise.



Step 14: Rotate the gear to "Mode" position.



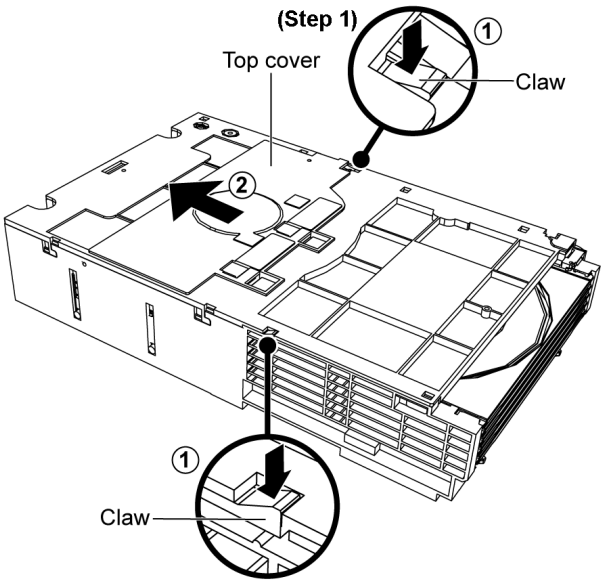
Step 15: Attach the top cover to the tray stoppers.

Step 16: Slide the top cover as arrow shown.

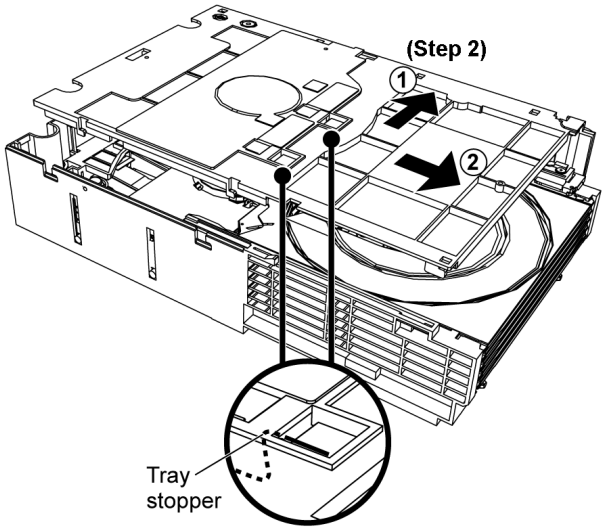
Note: Ensure both claws are catched.

(Refer to Section 10.2 for disassembling of Mechanism unit.)

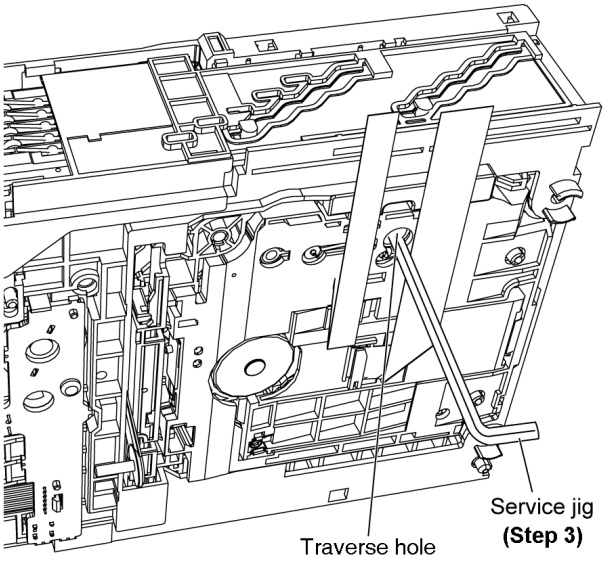
9.2.2. Manually set to “PLAY” position



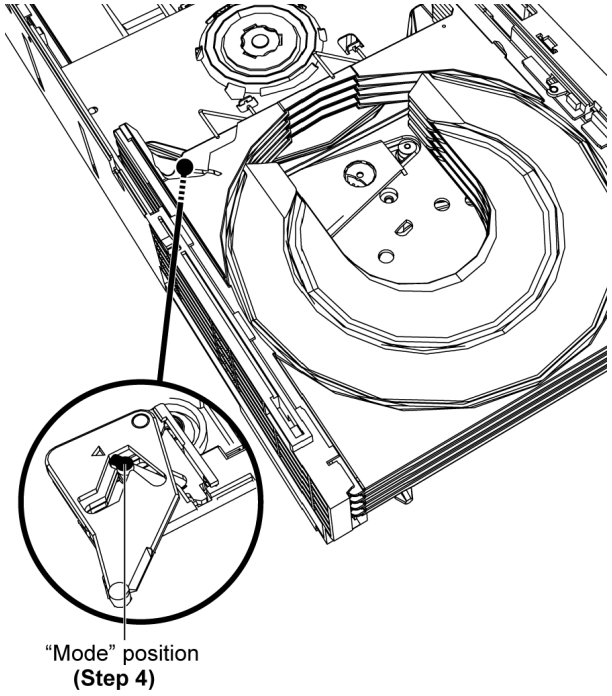
Step 1: Press both claws at the sides as arrows shown and push the top cover backwards.



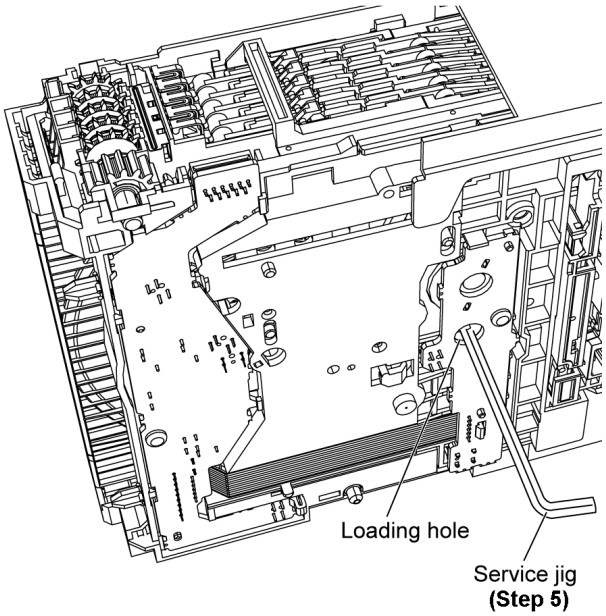
Step 2: Remove the top cover as arrows shown to release the tray stoppers.



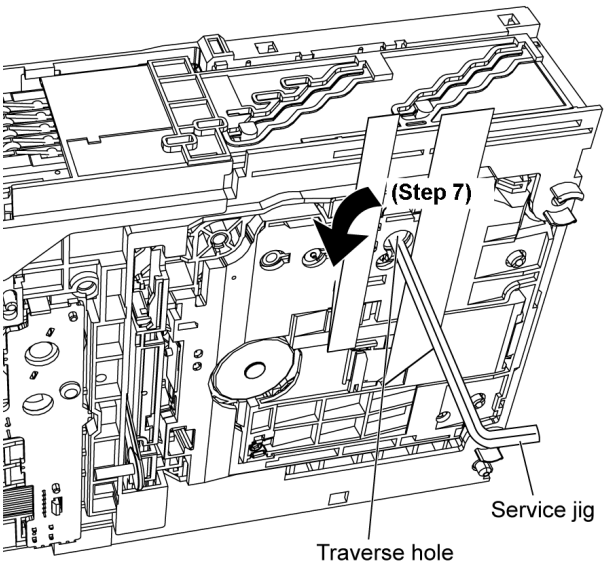
Step 3: Insert service jig into the traverse hole.



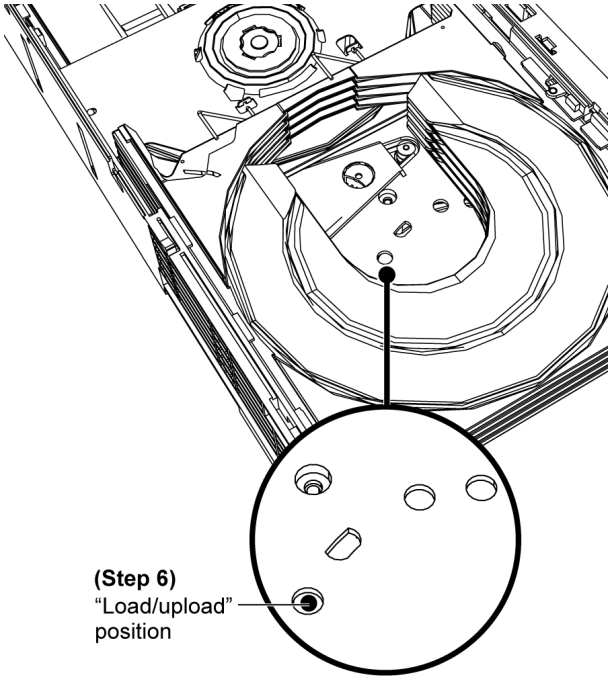
Step 4: Rotate the gear to “Mode” position.



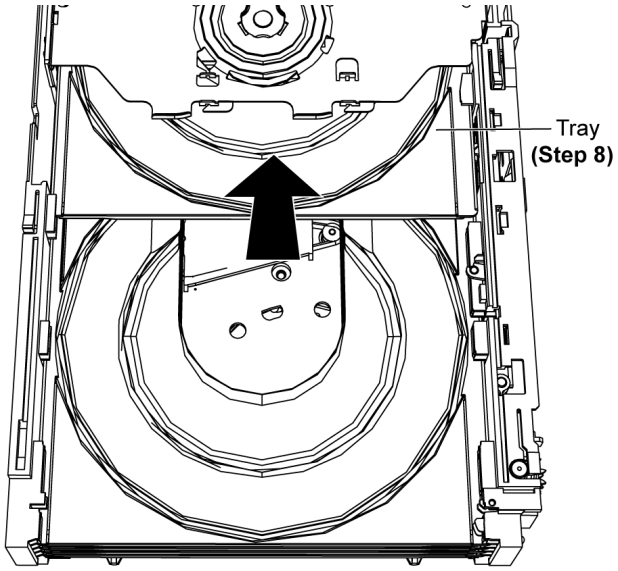
Step 5: Insert service jig into the loading hole.



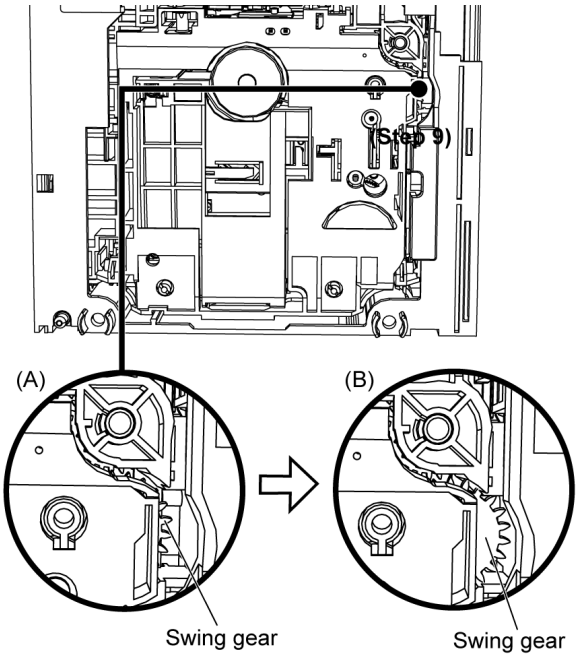
Step 7: Insert service jig into the traverse hole, rotate the gear counter clockwise.



Step 6: Rotate the gear to "Load/Upload" position.



Step 8: The tray gradually move to the play position.



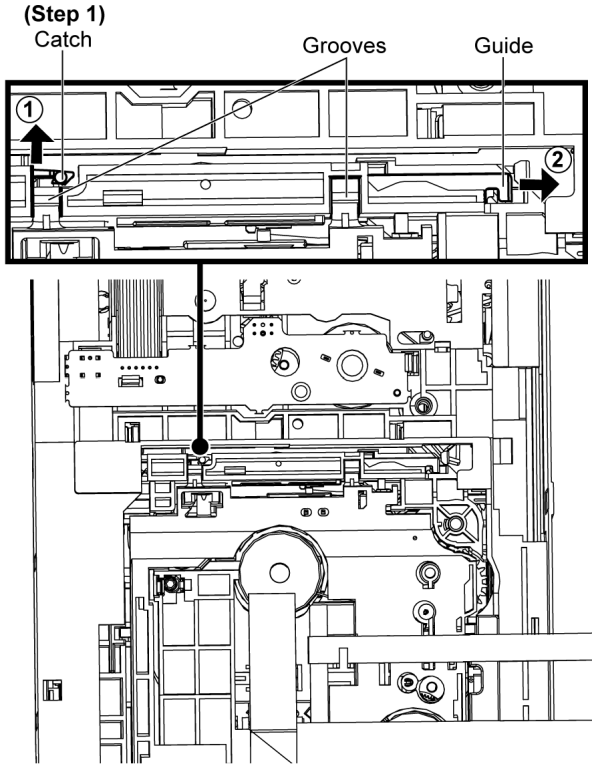
Step 9: Rotate the traverse hole continuously, until the swing gear from position (A) to (B).

(Refer to Section 10.1 for disassembling of Traverse unit assy.)

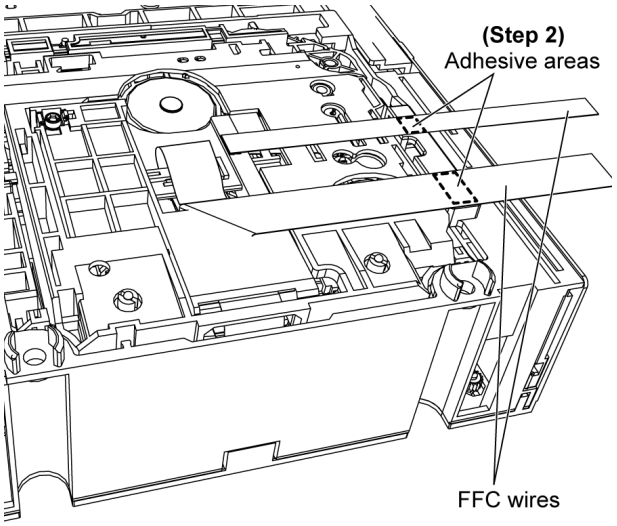
10 Disassembling and Assembling Procedure

10.1. Disassembling and assembling Traverse Unit Assy in play position

10.1.1. Disassembly of Traverse Unit Assy



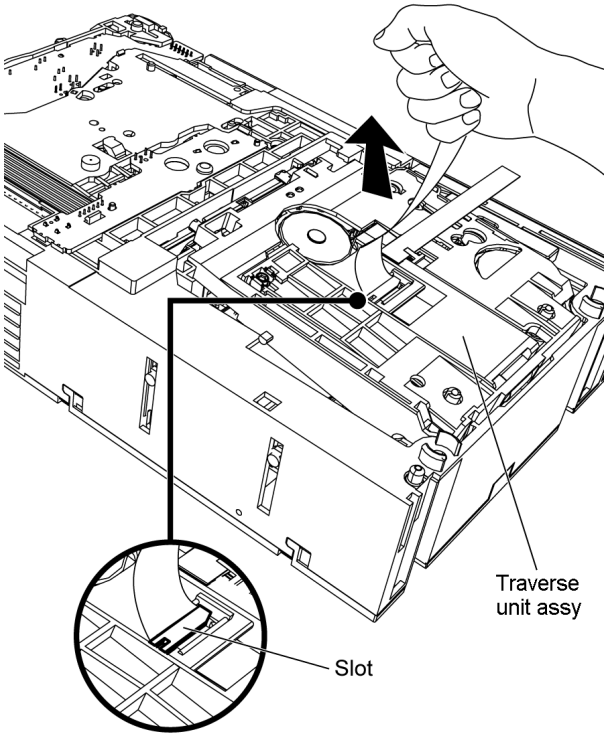
Step 1: Release the catch and push the guide as arrows shown to open both grooves.

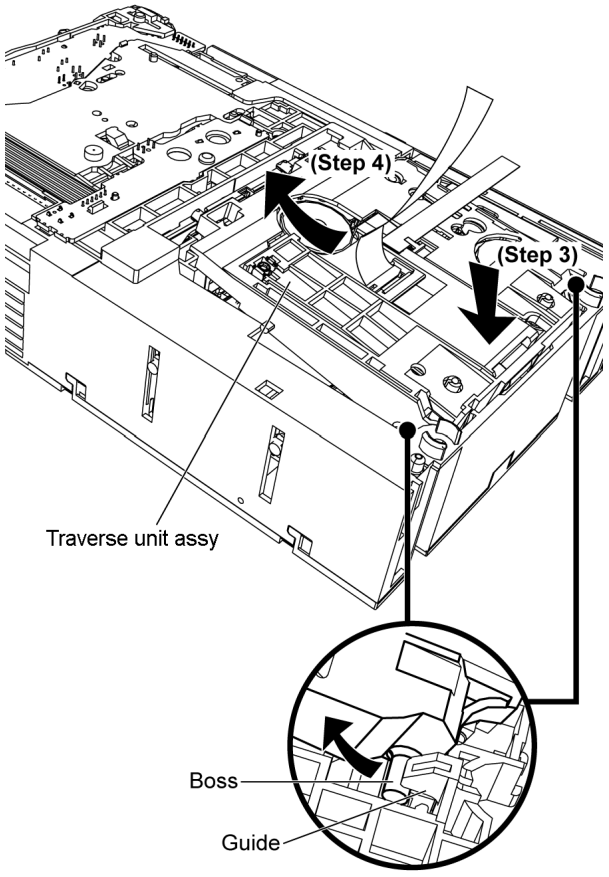


Step 2: Detach the FFC wires from the adhesive areas.

Caution:

Do not pull the FFC wire to remove the traverse unit assy, as it may cause damage to the slot.

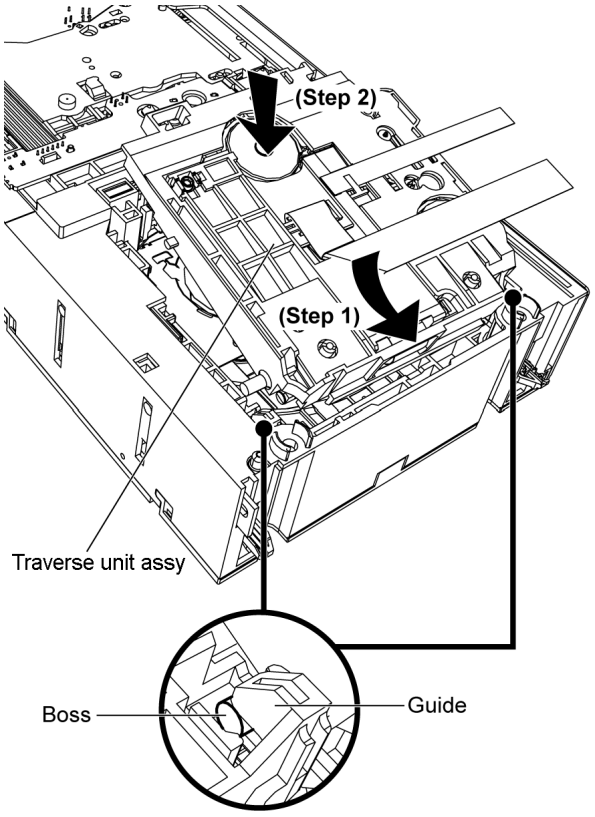




Step 3: Press down the traverse unit assy.

Step 4: Remove the traverse unit assy as arrow shown.

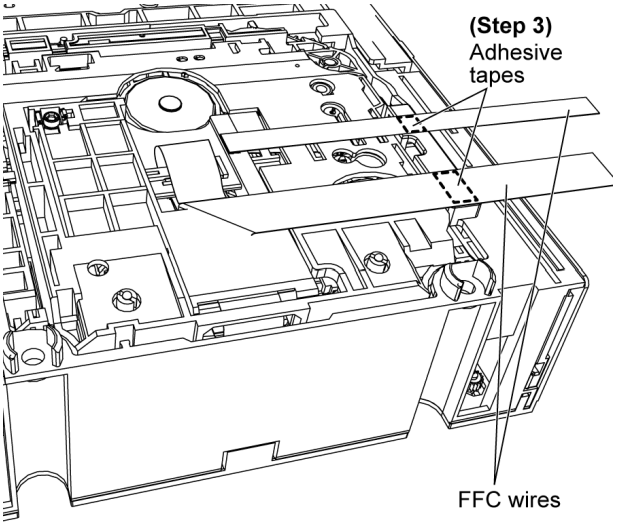
10.1.2. Assembly of Traverse Unit Assy



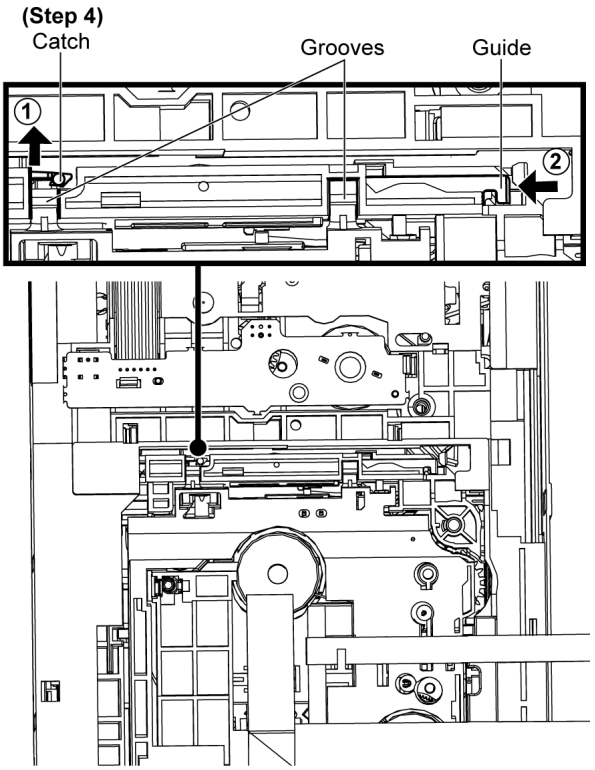
Step 1: Slot the traverse unit assy into the guides as arrow shown.

Note: Ensure the bosses fix exactly onto the guides.

Step 2: Place down the traverse unit assy.



Step 3: Fix the FFC wires by using the adhesive tapes.

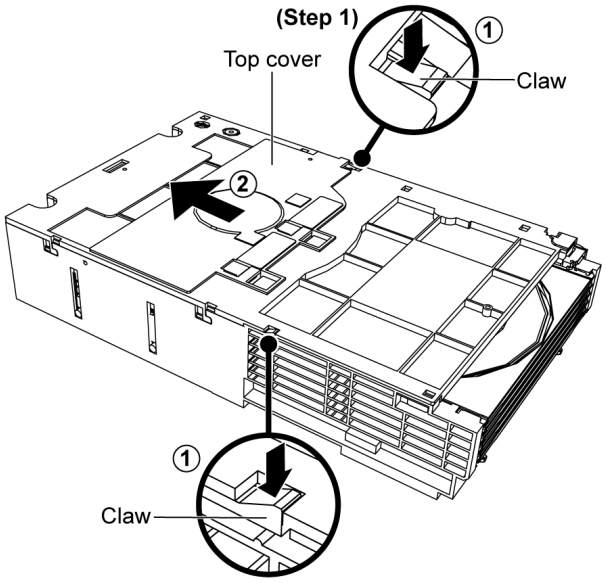


Step 4: Release the catch and push the guide as arrows shown to close both grooves.

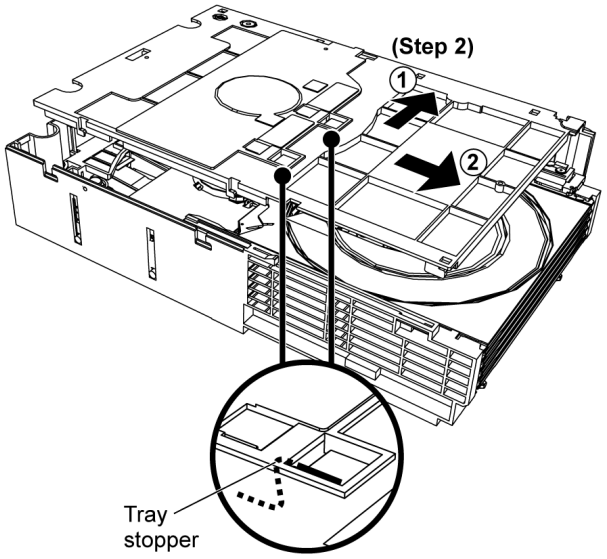
10.2. Disassembling of Mechanism Unit in “UD” Position

Note: Mechanism unit (CR14) reliability test can be carried out in complete unit or using the Reliability P.C.B (Refer to section 8).

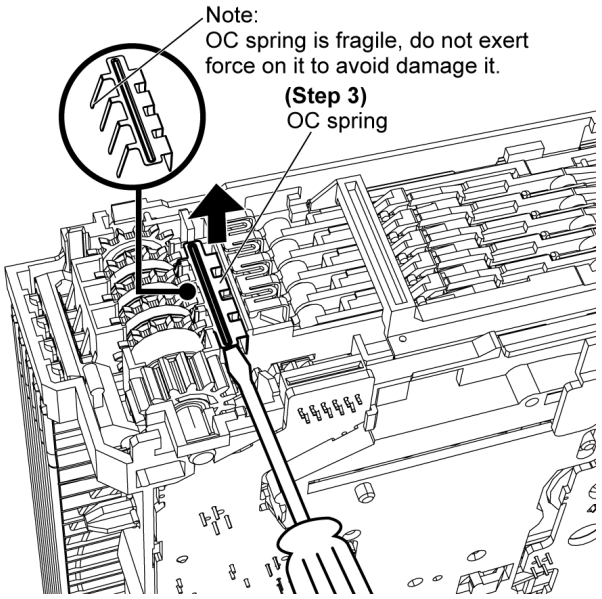
10.2.1. Disassembly of UD Base Unit



Step 1: Press both claws at the sides as arrows shown and push the top cover backwards.

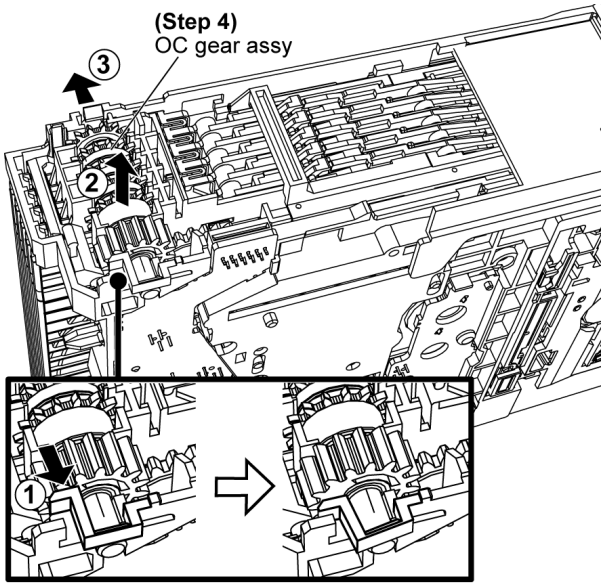


Step 2: Remove the top cover as arrows shown to release the tray stoppers.



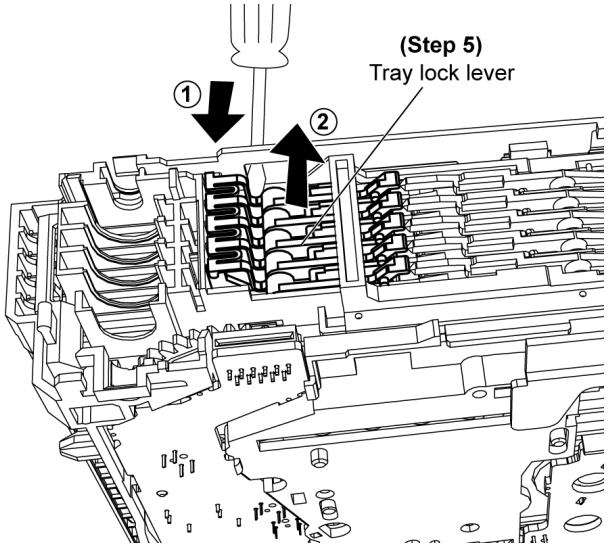
Step 3: Use a flathead screwdriver to remove OC spring.

Note: Ensure the OC spring is handle properly and keep it in a safe place.

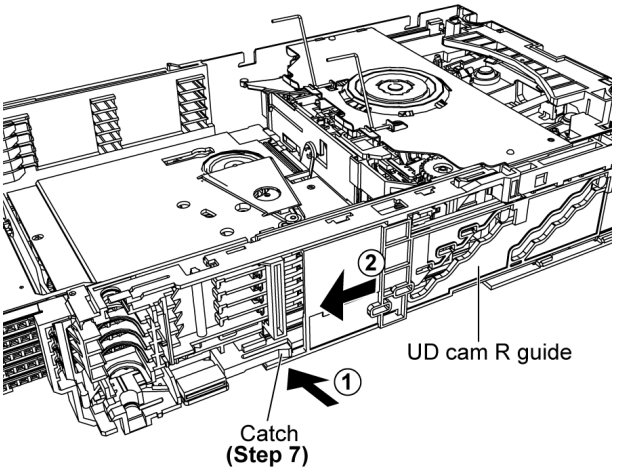


Step 4: Remove OC gear assy as arrows shown.

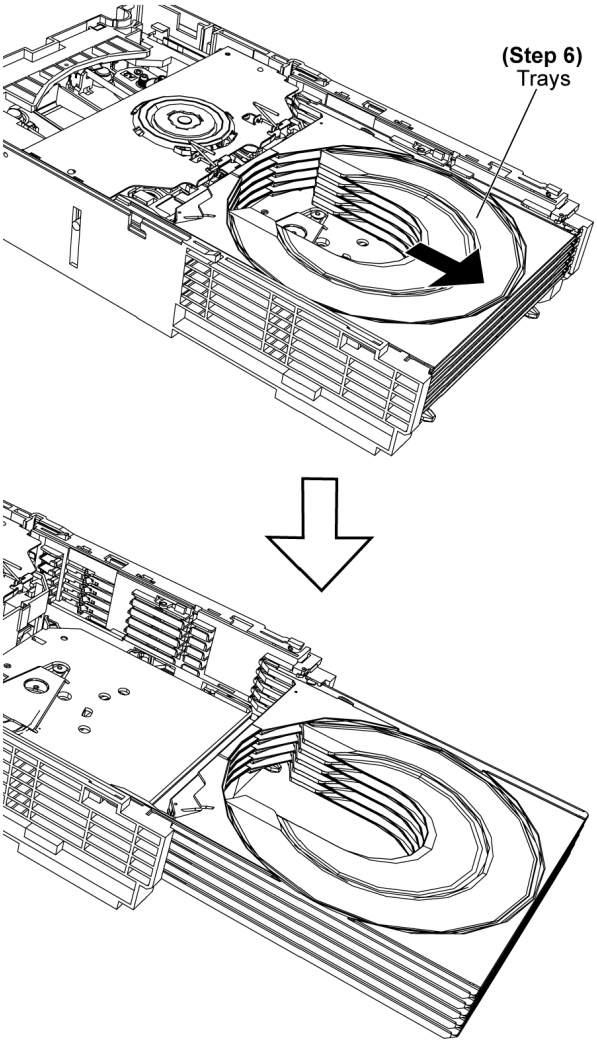
Note: Ensure the OC gear assy is handle properly and keep it in a safe place.



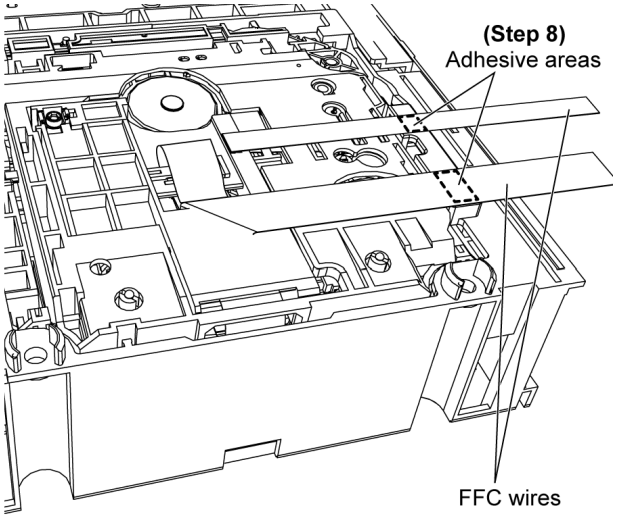
Step 5: Use a flathead screwdriver slot into the gap and push out the tray lock lever as arrows shown.



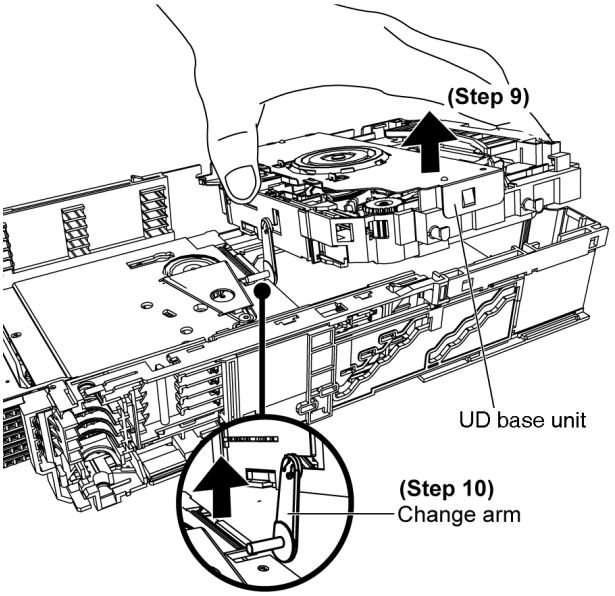
Step 7: Push the catch and slide the UD cam R guide as arrows shown.



Step 6: Push the trays towards the front as arrow shown.

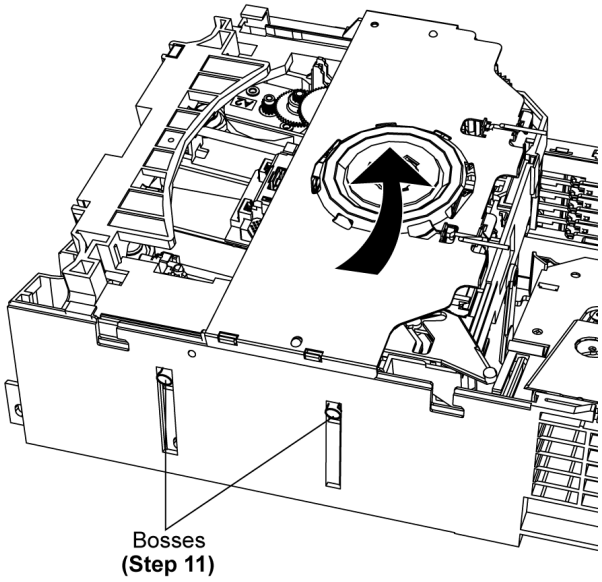


Step 8: Turn over the unit and detach the FFC wires from the adhesive areas.



Step 9: Lift up the UD base unit.

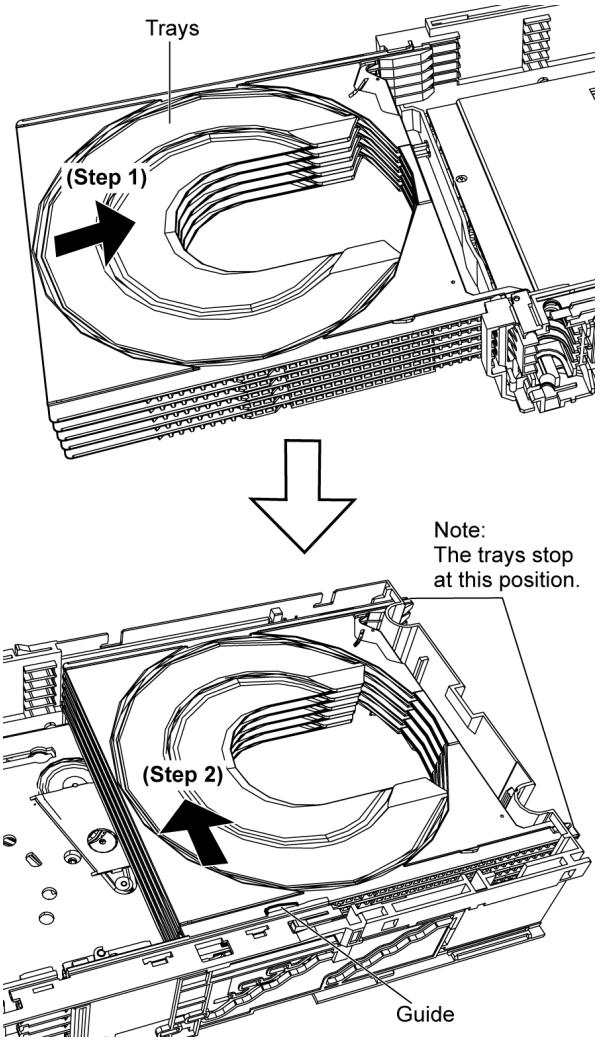
Step 10: Release the change arm.



Step 11: Remove the UD base unit as arrow shown.

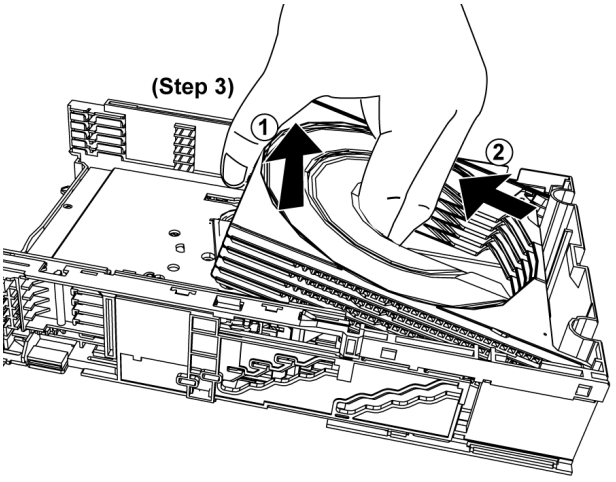
10.2.2. Disassembly of Trays

- Follow (Step 1) to (Step 11) in item 10.2.1.



Step 1: Push the trays as arrow shown until they stop (bottom picture).

Step 2: Tilt the trays towards one side as arrow shown.

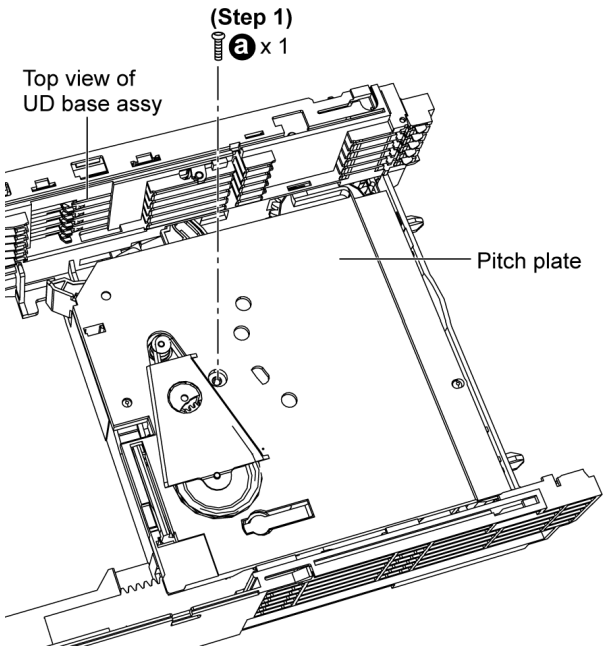


Step 3: Lift and remove the trays as arrows shown.

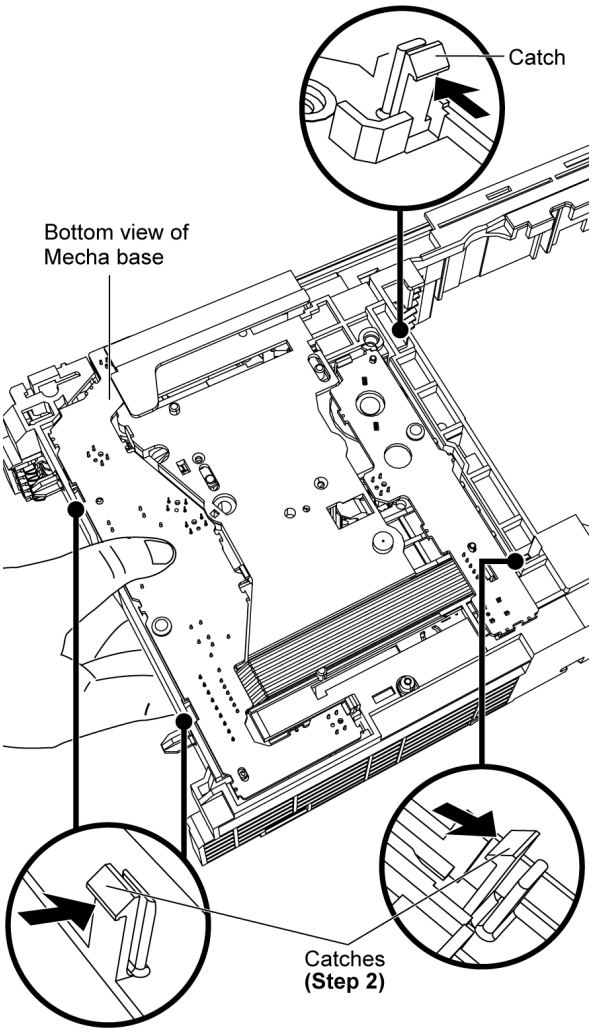
10.2.3. Disassembly of Mecha Base Unit Parts

- Follow (Step 1) to (Step 11) in item 10.2.1.
- Follow (Step 1) to (Step 3) in item 10.2.2.

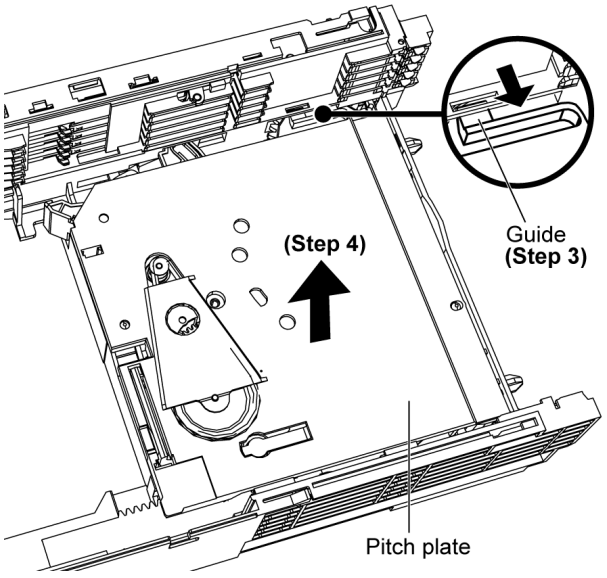
- **Disassembly of Pitch Plate**



Step 1: Remove 1 screw.



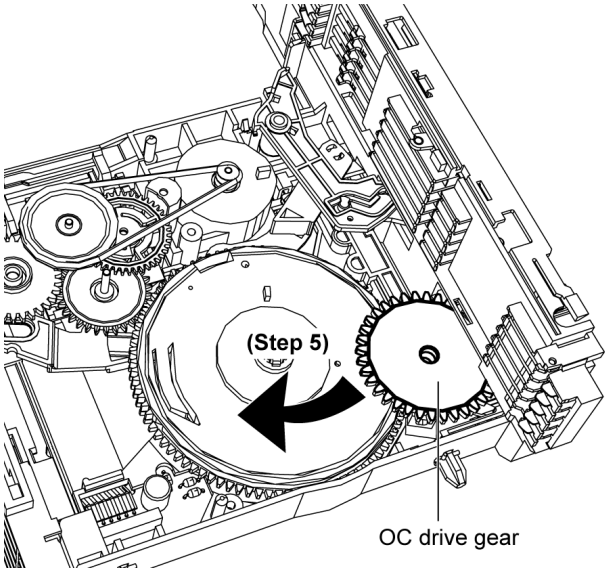
Step 2: Release the catches.



Step 3: Release guide.

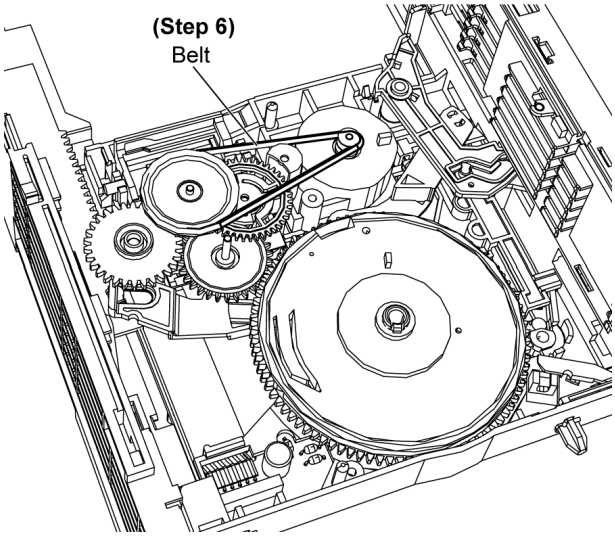
Step 4: Remove the pitch plate as arrow shown.

- **Disassembly of OC Drive Gear**

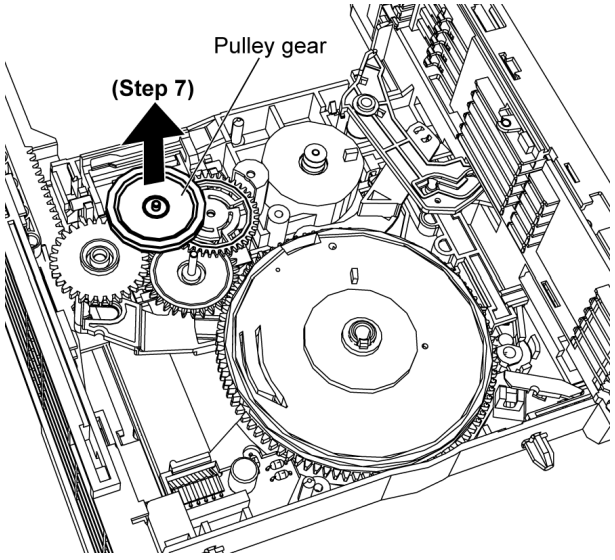


Step 5: Remove OC drive gear as arrow shown.

• **Disassembly of Belt and Pulley Gear**

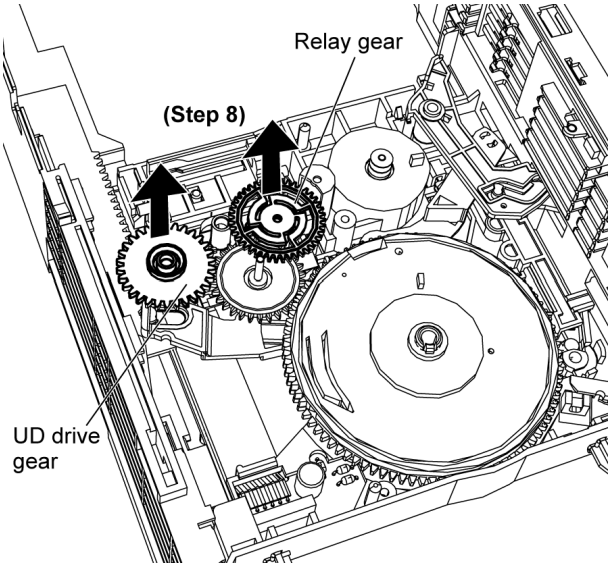


Step 6: Remove belt.



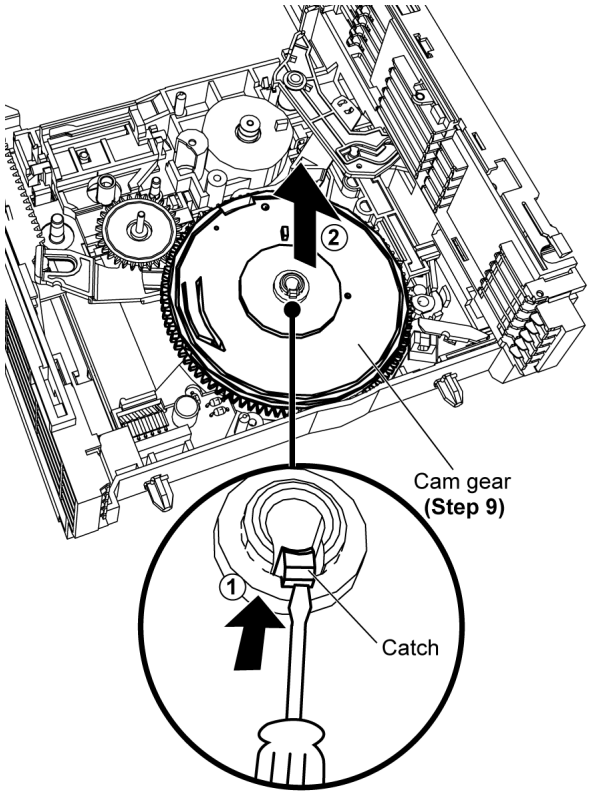
Step 7: Remove pulley gear.

• **Disassembly of Relay Gear and UD Drive Gear**



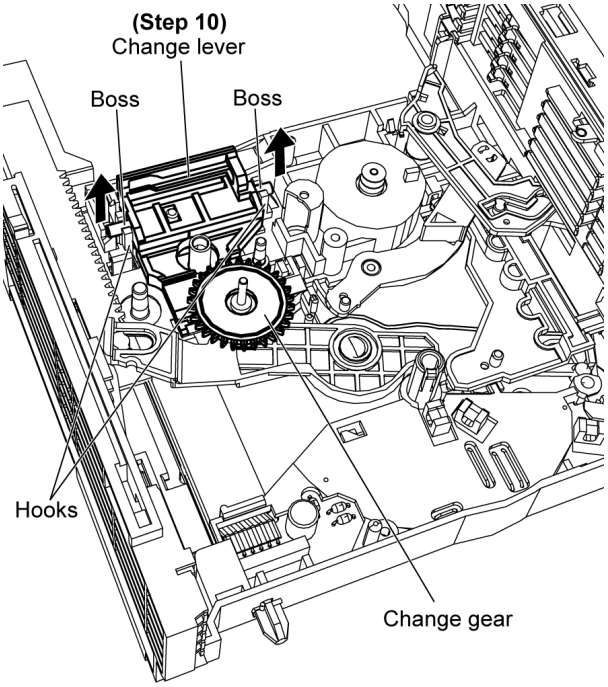
Step 8: Remove relay gear and UD drive gear.

• **Disassembly of Cam Gear**



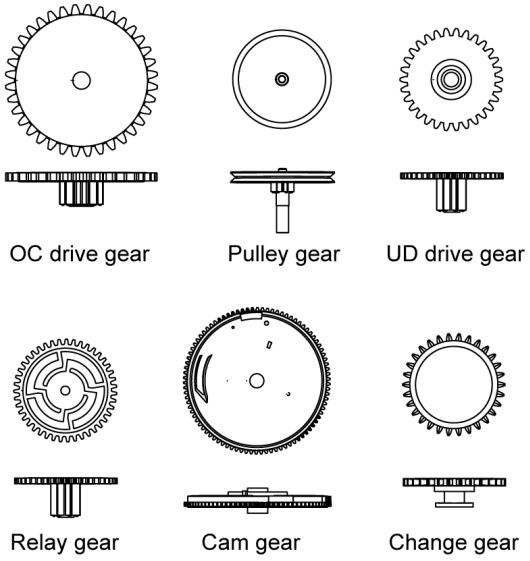
Step 9: Use a flathead screwdriver to push the catch inwards and remove cam gear as arrows shown.

• **Disassembly of Change Lever and Change Gear**

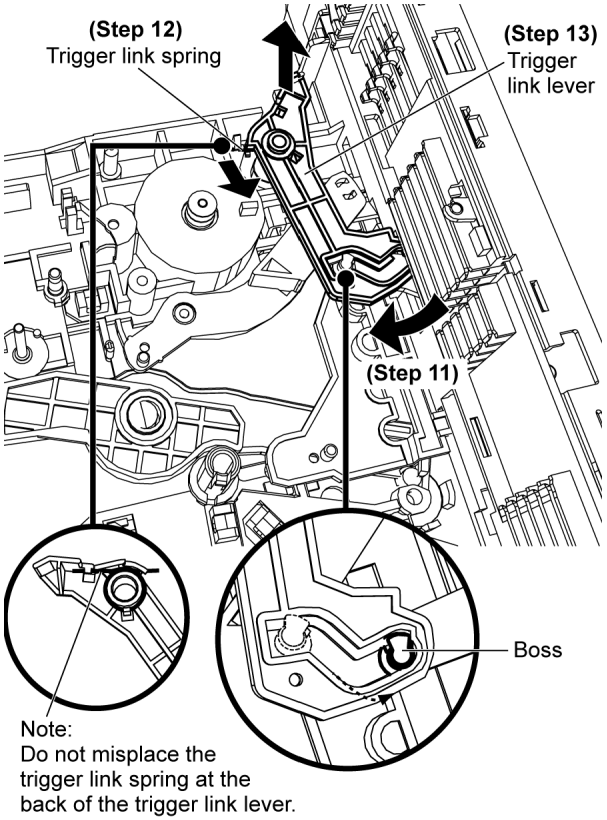


Step 10: Release change lever's bosses from the hooks and remove both change lever and change gear together.

• **Illustration of the gears**



• **Disassembly of Trigger Link Lever**

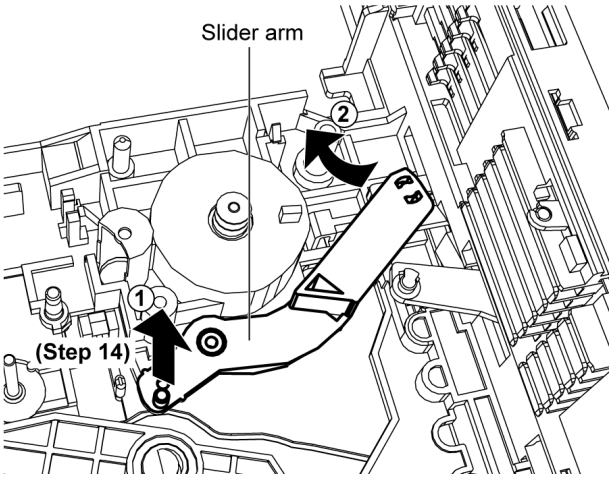


Step 11: Slide and hold the trigger link lever to the position as picture shown.

Step 12: Release the trigger link spring.

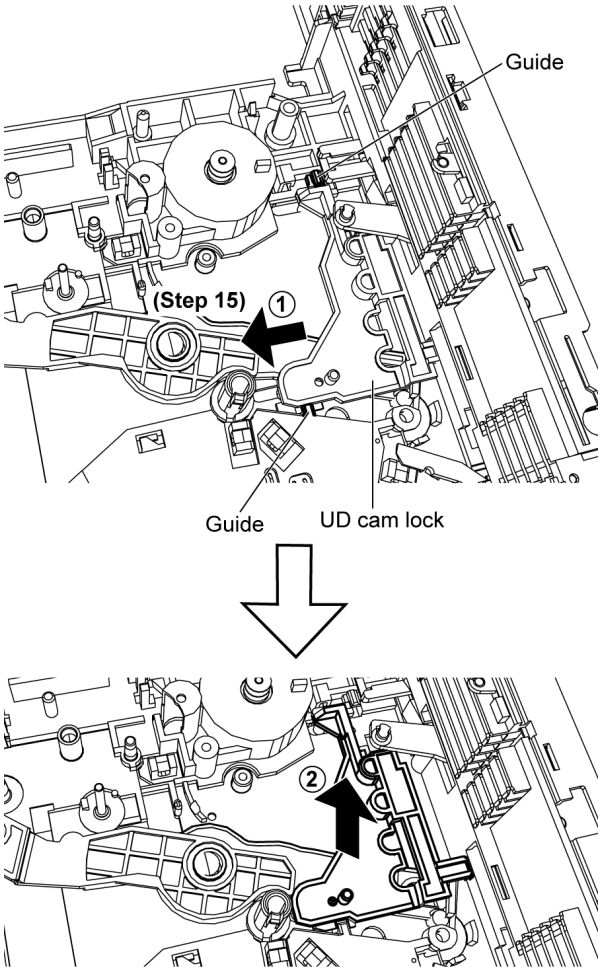
Step 13: Remove the trigger link lever.

• **Disassembly of Slider Arm**



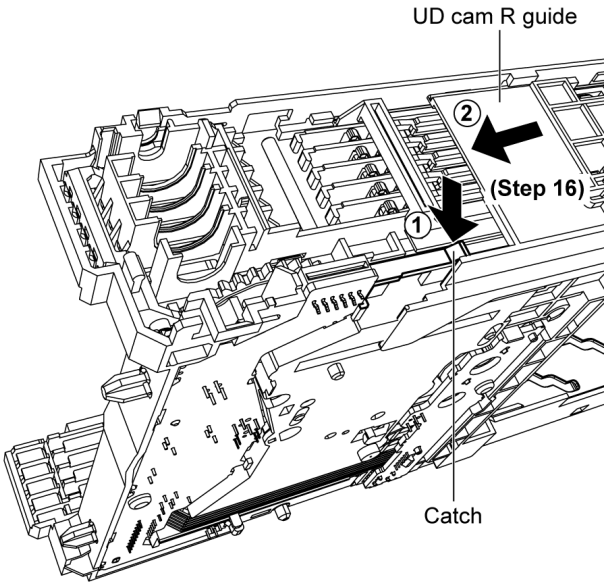
Step 14: Remove slider arm as arrows shown.

• **Disassembly of UD Cam Lock**

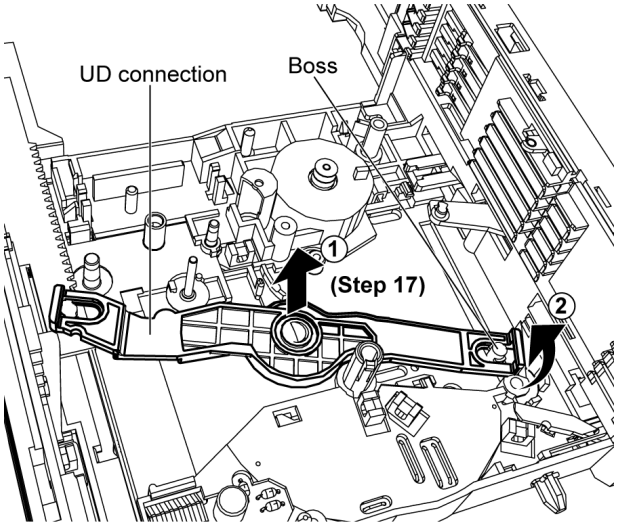


Step 15: Release from the guides of the mecha base assy and remove UD cam lock as arrows shown.

• **Disassembly of UD Connection**

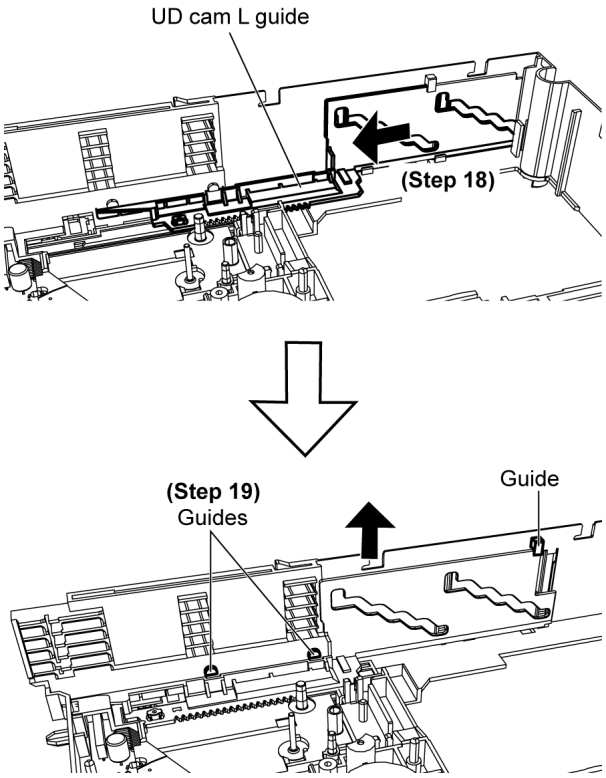


Step 16: Push the catch and slide the UD cam R guide as arrows shown.



Step 17: Push up the UD connection from the centre and detach it from the boss as arrows shown.

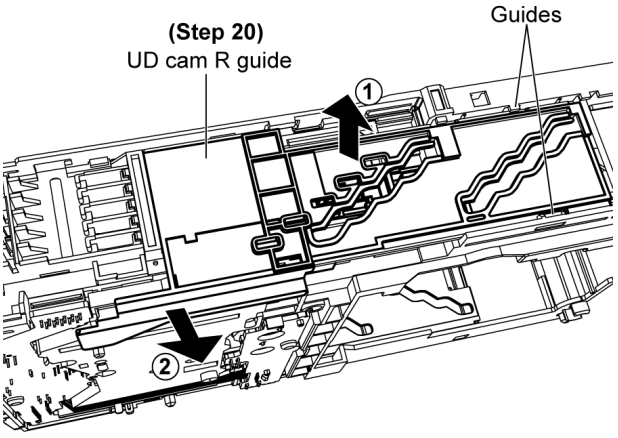
• **Disassembly of UD Cam L Guide**



Step 18: Slide UD cam L guide as arrows shown.

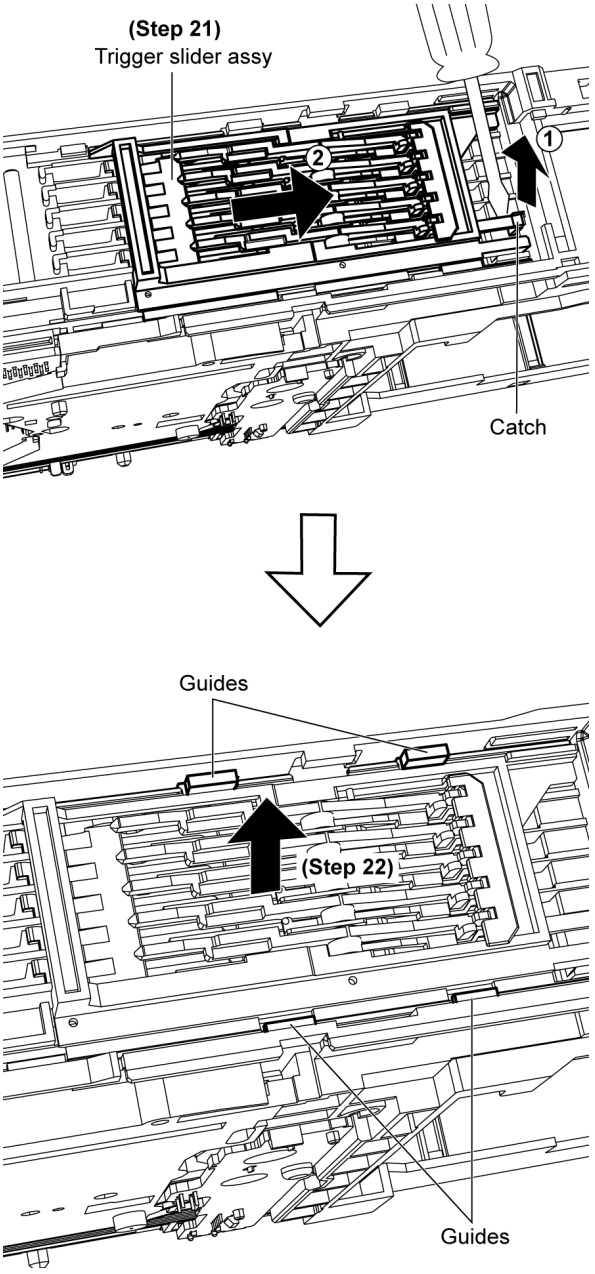
Step 19: Ensure all guides align with the UD cam L guide's grooves and remove it as arrow shown.

• **Disassembly of UD Cam R Guide**



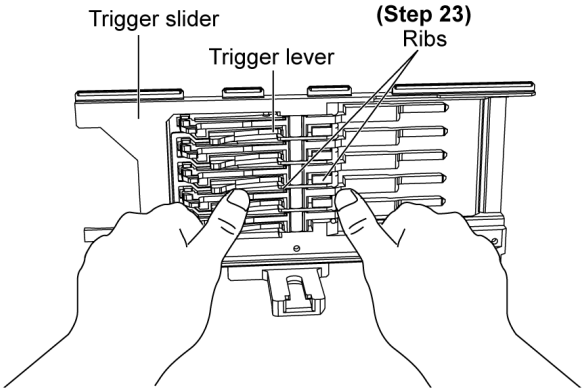
Step 20: Ensure both guides align with the UD cam R guide's grooves and remove it as arrows shown.

• **Disassembly of Trigger Slider Assy**



Step 21: Use a flathead screwdriver to release catch and slide trigger slider assy to the end.

Step 22: Ensure all guides align with the trigger slider assy's grooves and remove it.

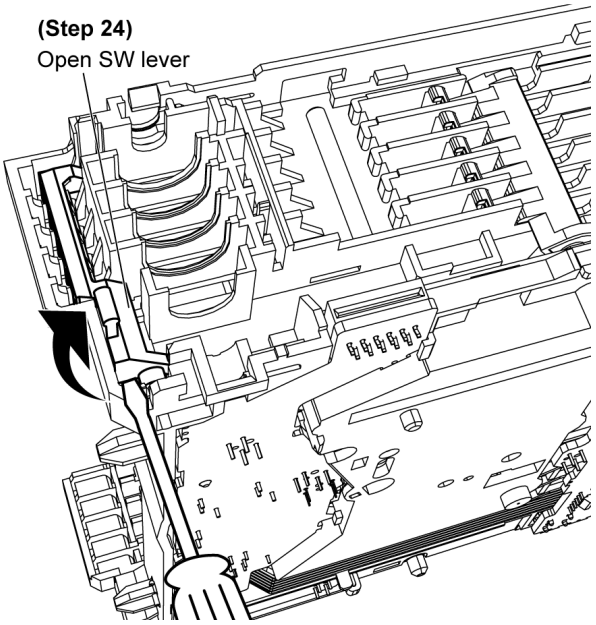


Step 23: Press down individual ribs to detach trigger lever.

Caution:

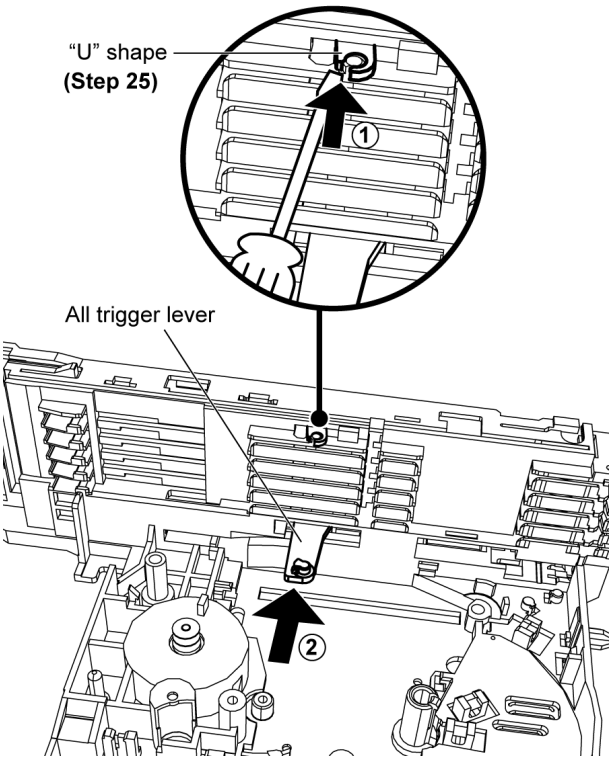
Do not exert force as it may cause damage to the trigger lever.

- **Disassembly of Open Switch Lever**



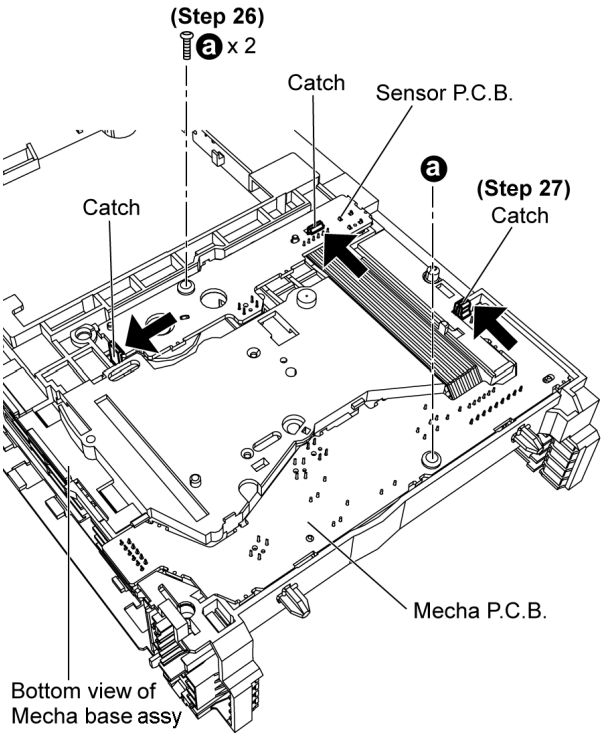
Step 24: Use a flathead screwdriver to push up the open switch lever and remove it.

- **Disassembly of All Trigger Lever**



Step 25: Use a flathead screwdriver push the "U" shape and push out the all trigger lever from the bottom.

- **Disassembly of Mecha P.C.B. and Sensor P.C.B.**



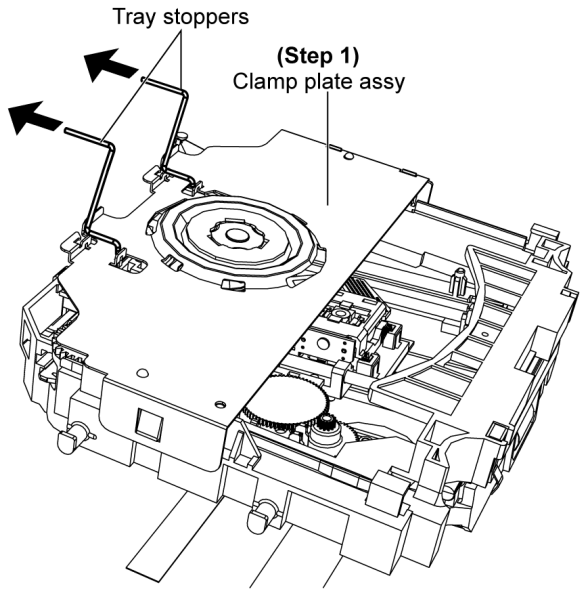
Step 26: Remove 2 screws.

Step 27: Release all catches to remove Mecha P.C.B. and Sensor P.C.B.

10.2.4. Disassembly of UD Base Unit Parts

- Follow (Step 1) to (Step 11) in item 10.2.1.

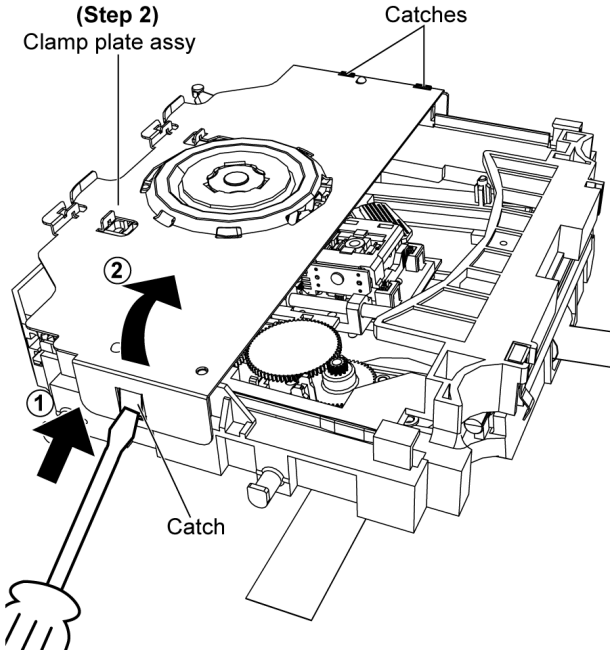
- **Disassembly of Tray Stoppers**



Step 1: Remove tray stoppers.

Note: Ensure the tray stoppers are handle properly and keep them in a safe place.

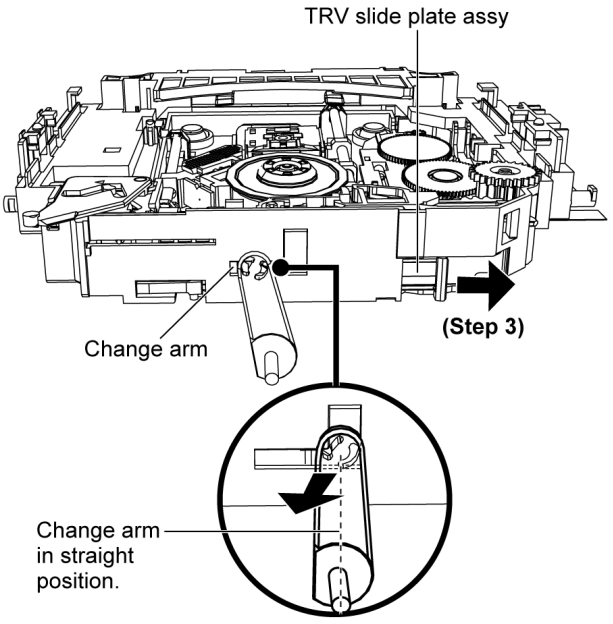
- **Disassembly of Clamp Plate Assy**



Step 2: Use a flathead screwdriver push the catch and remove clamp plate assy as arrows shown.

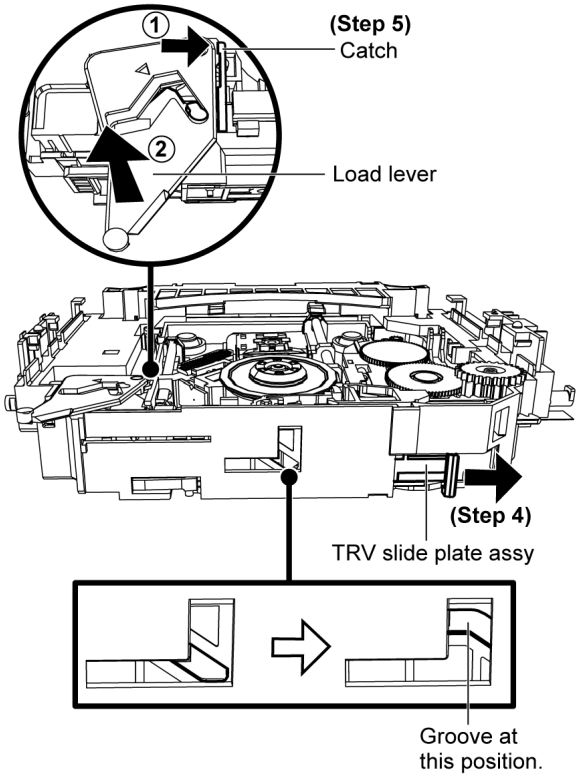
Note: Be careful of the other side catches when removing the clamp plate assy.

- **Disassembly of Change Arm**



Step 3: Slide the TRV slide plate assy until the change arm at the position shown and remove the change arm as arrow shown.

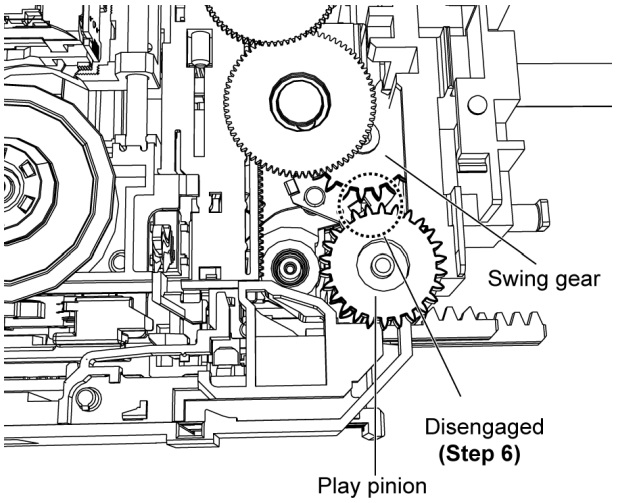
- **Disassembly of Load Lever**



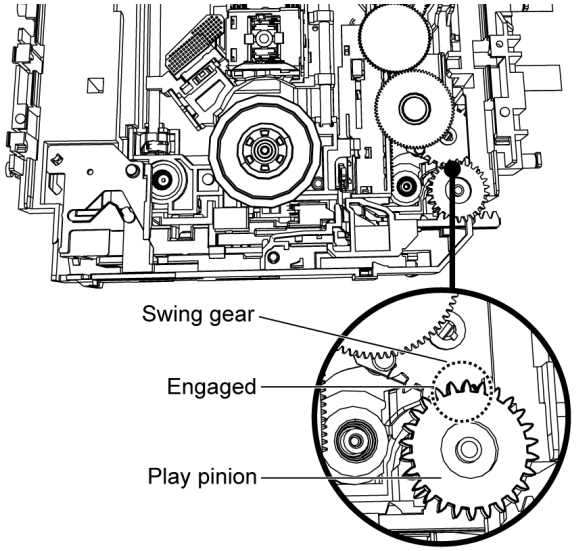
Step 4: Continue slide the TRV slide plate assy until the groove at the position shown.

Step 5: Release catch and remove load lever as arrows shown.

- **Disassembly of Traverse Unit Assy**

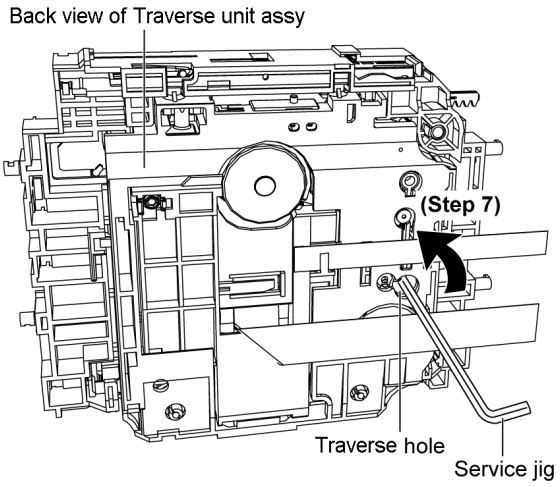


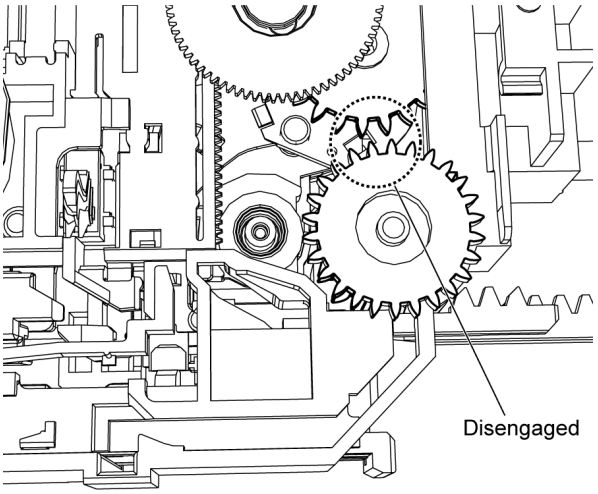
Step 6: Check if the swing gear is disengaged from the play pinion before disassembly.



Caution:

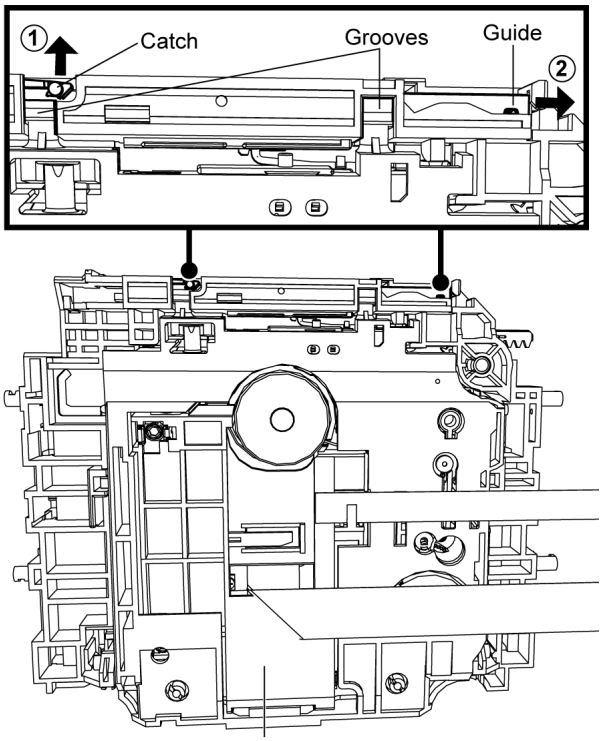
If it is engaged, the following steps are necessary.





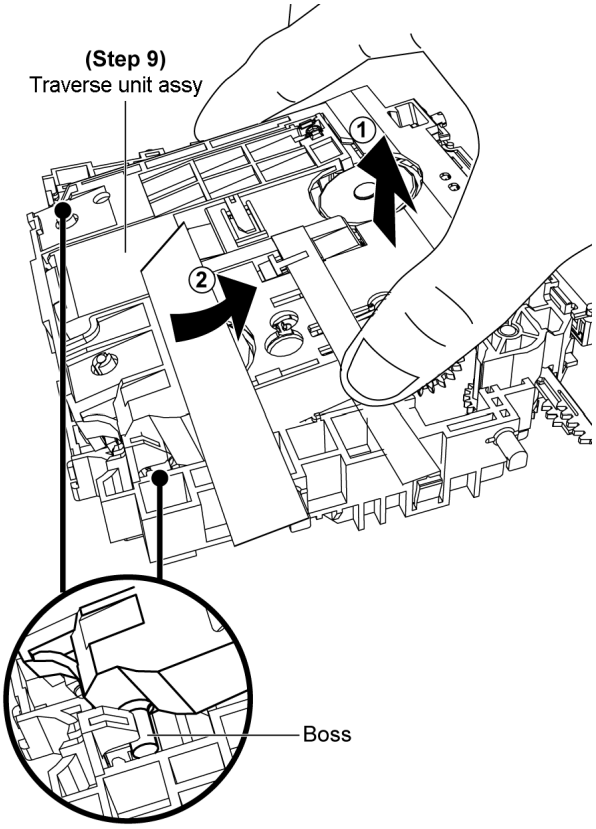
Step 7: Insert service jig into the traverse hole, rotate the gear counter clockwise, ensure the swing gear is disengaged.

(Step 8)



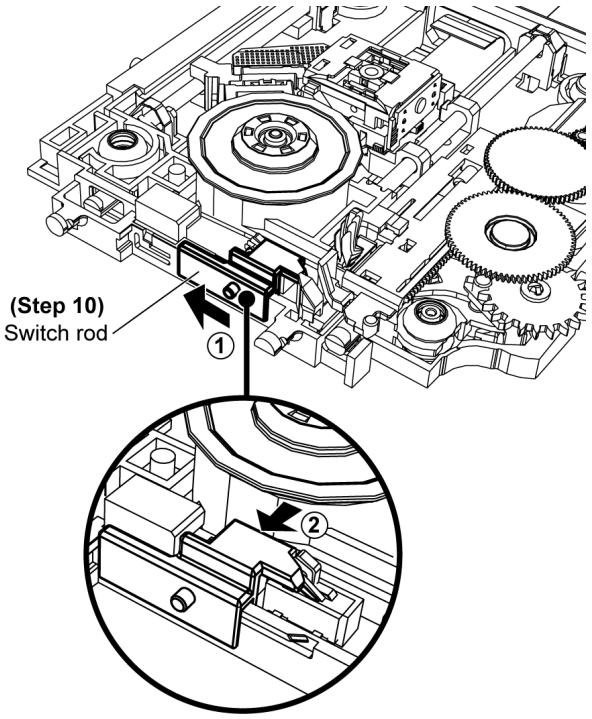
Step 8: Release catch and push the guide as arrows shown to open the grooves.

(Step 9)
Traverse unit assy



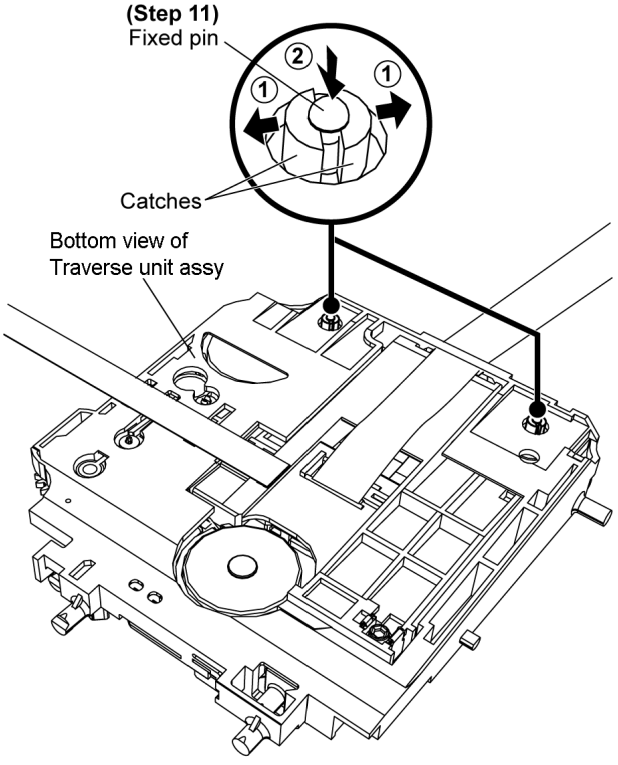
Step 9: Remove traverse unit assy as arrows shown.

• **Disassembly of Traverse Unit**

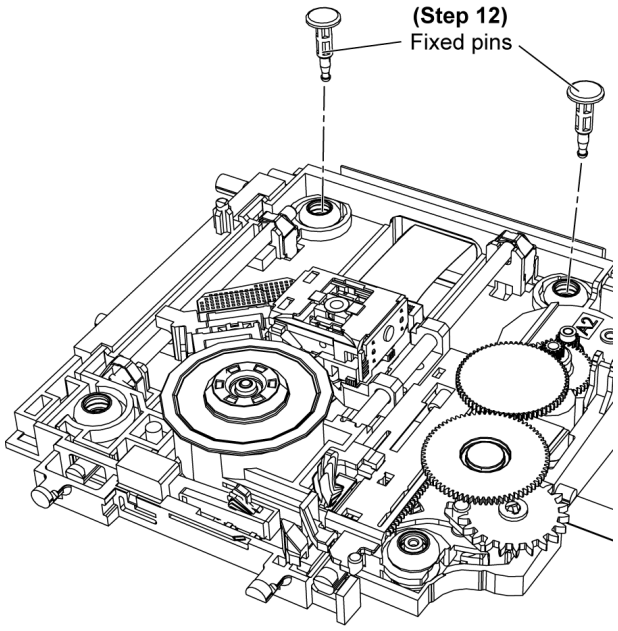


Step 10: Slide the switch rod and remove it as arrows shown.

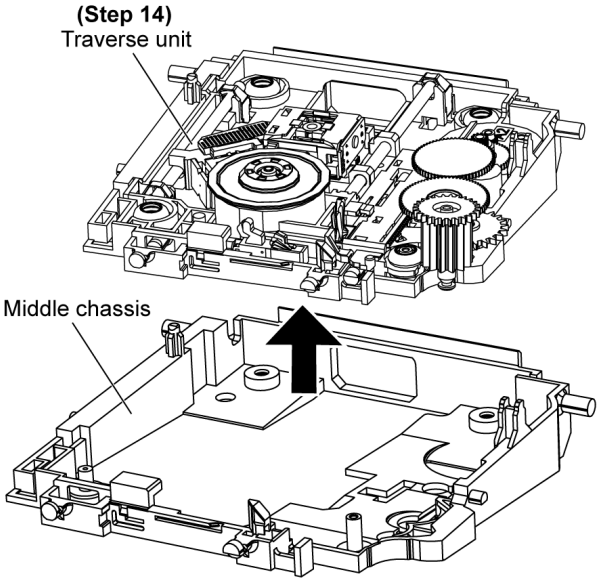
(Step 11)
Fixed pin



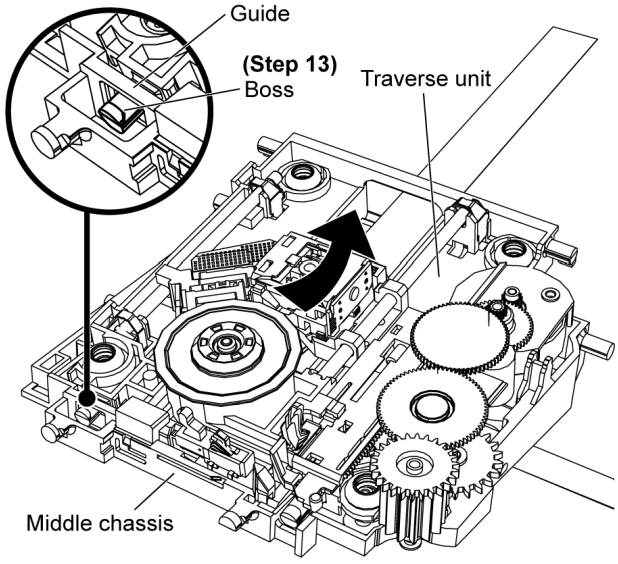
Step 11: Release both catches and push down the fixed pin as arrows shown.



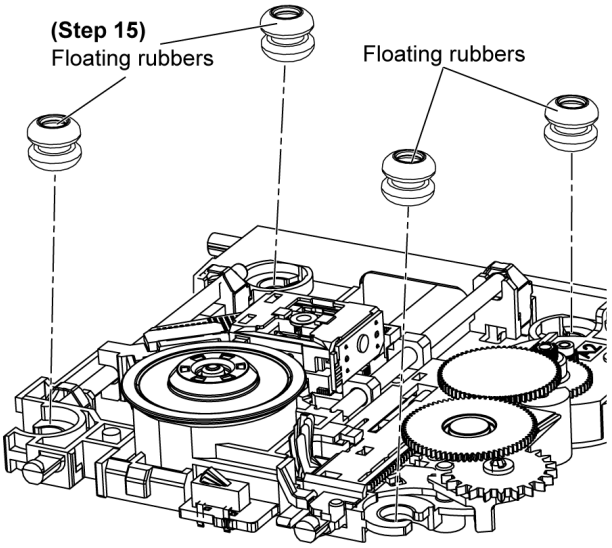
Step 12: Remove 2 fixed pins from the top of the traverse unit assy.



Step 14: Remove the traverse unit.

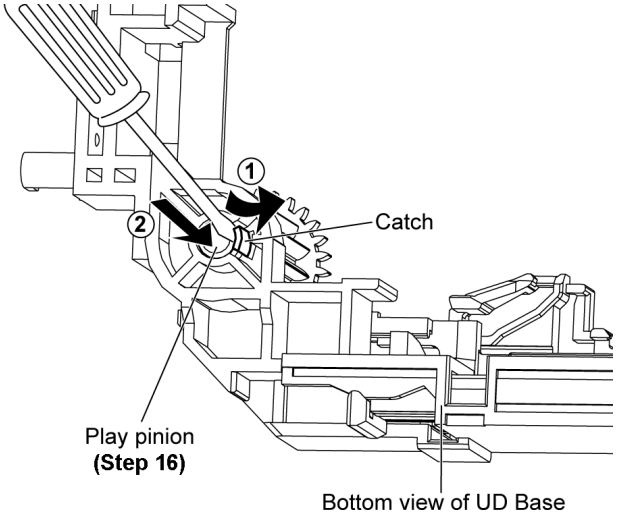


Step 13: Tilt and pull the traverse unit as arrow shown. Ensure the boss out of the middle chassis's guide.



Step 15: Remove 4 floating rubbers.

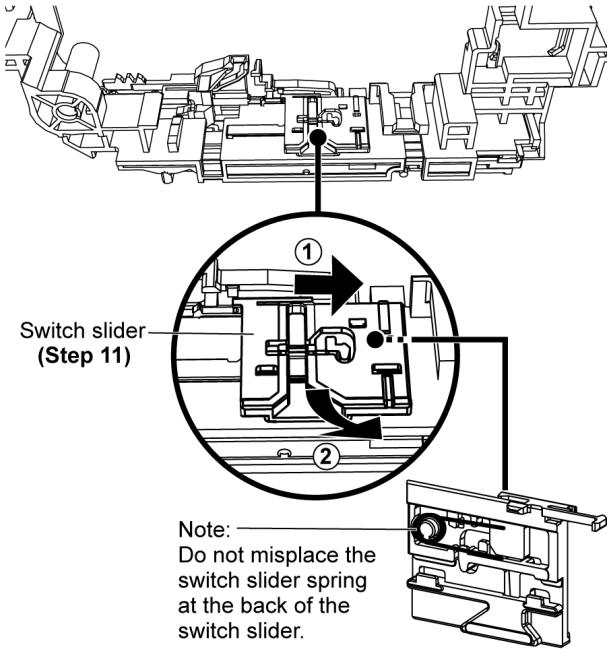
• **Disassembly of Play Pinion**



Step 16: Use a flathead screwdriver to release the catch and push down play pinion as arrows shown.

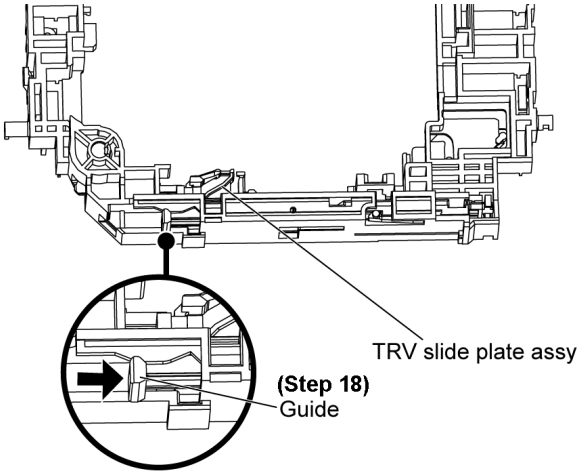
• **Illustration of the Play Pinion**

• **Disassembly of Switch Slider**

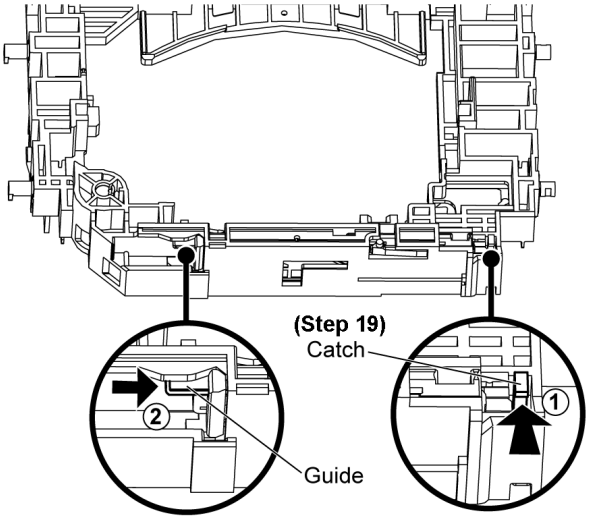


Step 17: Push switch slider as direction shown until it stop and remove it.

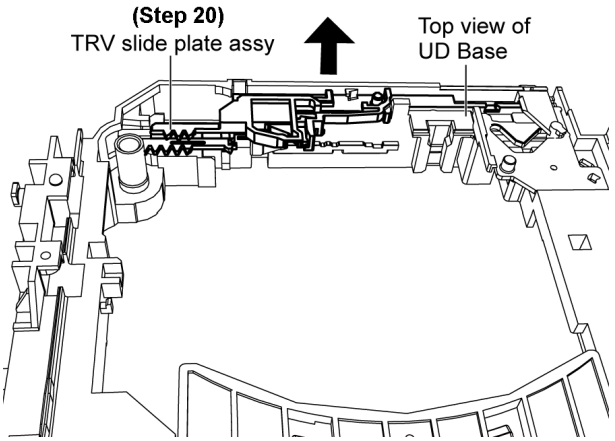
• **Disassembly of TRV Slide Plate Assy**



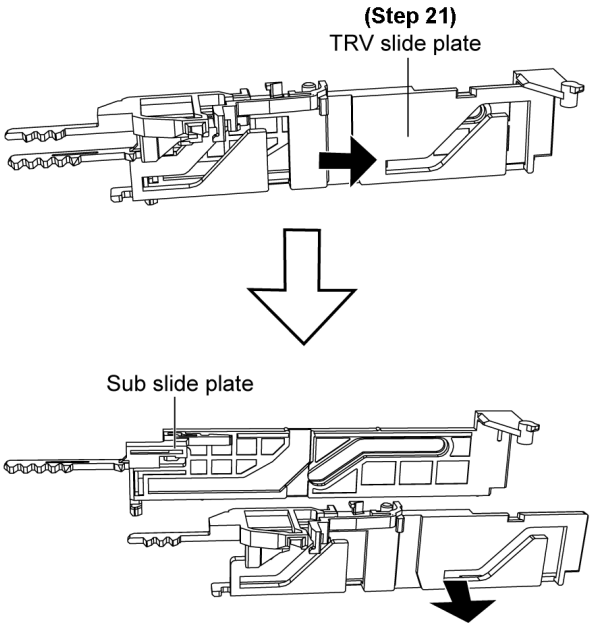
Step 18: Push the guide as arrow shown.



Step 19: Release the catch and push the guide as arrows shown.

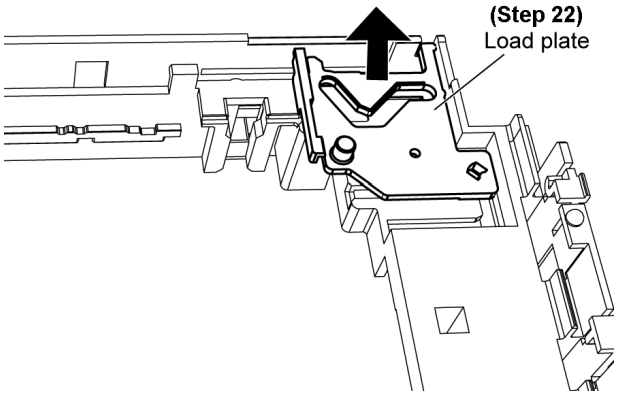


Step 20: Remove TRV slide plate assy.



Step 21: Slide the TRV slide plate as arrow shown then detach the TRV slide plate from the sub slide plate.

- **Disassembly of Load Plate**

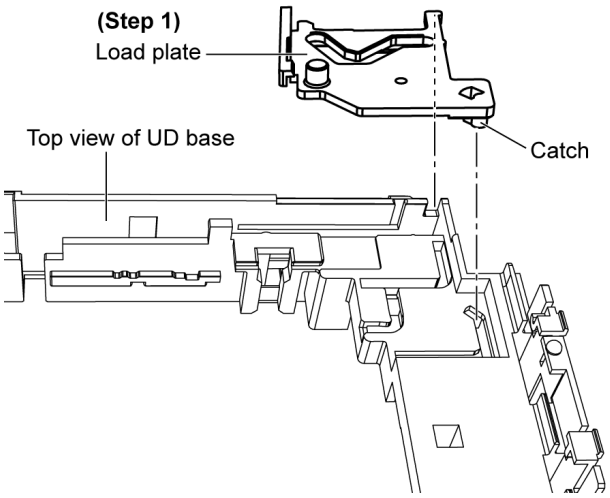


Step 22: Position load plate as picture shown to remove it.

10.3. Assembling of Mechanism Unit

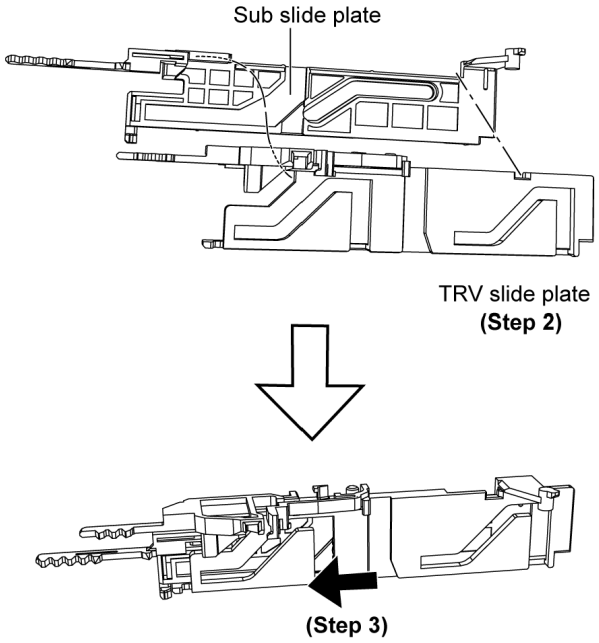
10.3.1. Assembly of UD Base Unit Parts

- **Assembly of Load Plate**



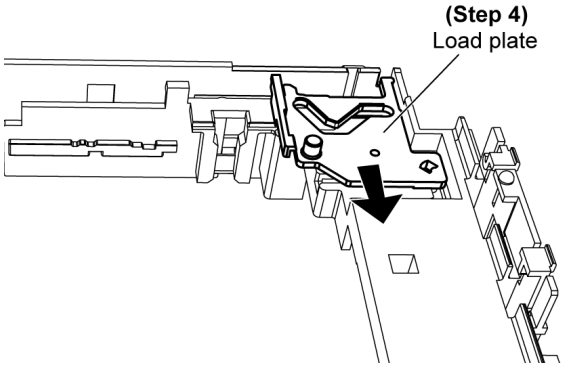
Step 1: Install load plate.

- **Assembly of TRV Slide Plate Assy**

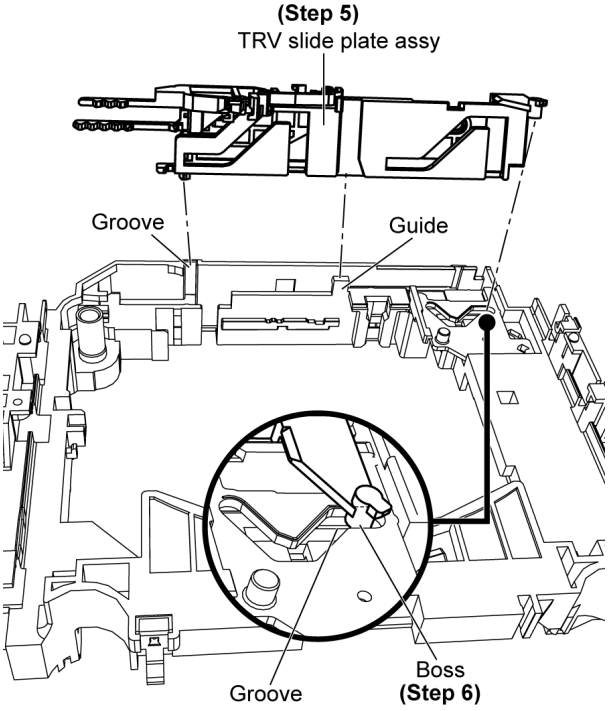


Step 2: Attach the TRV slide plate to the sub slide plate.

Step 3: Slide the TRV slide plate until it stop.



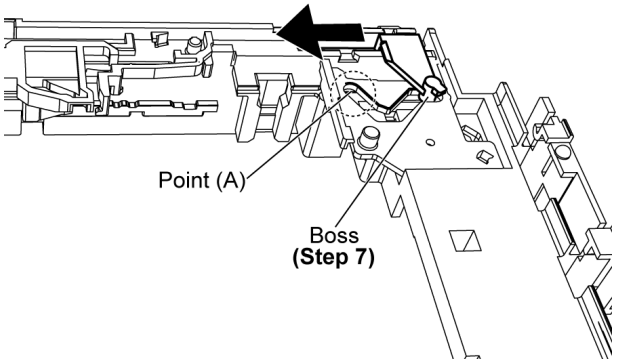
Step 4: Slide the load plate until it stop.



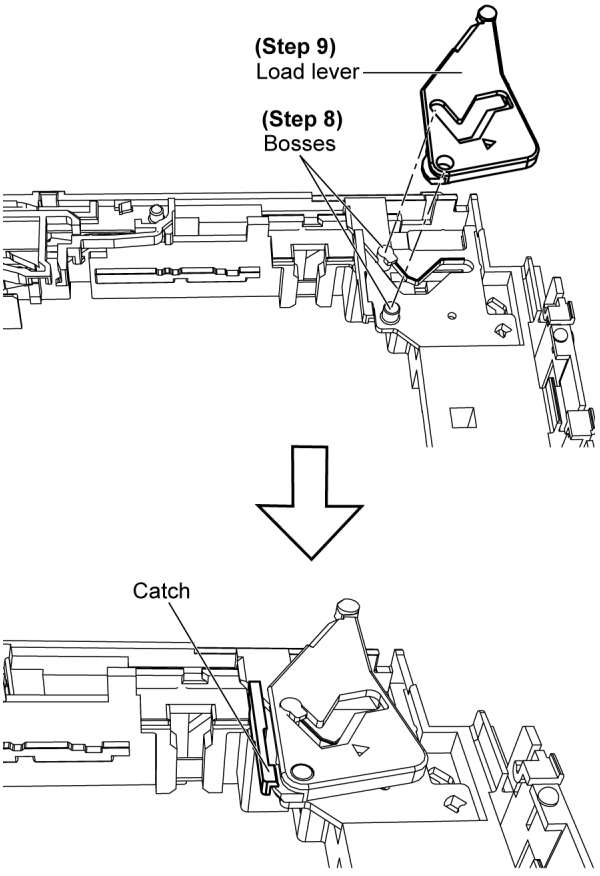
Step 5: Install TRV slide plate assy align to groove and guide of the UD base.

Step 6: Ensure the boss seated properly onto the groove.

• **Assembly of Load Lever**



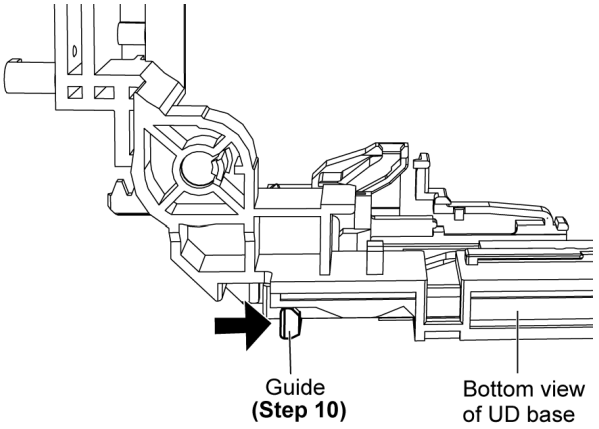
Step 7: Push as arrow shown to ensure the boss seated on point (A).



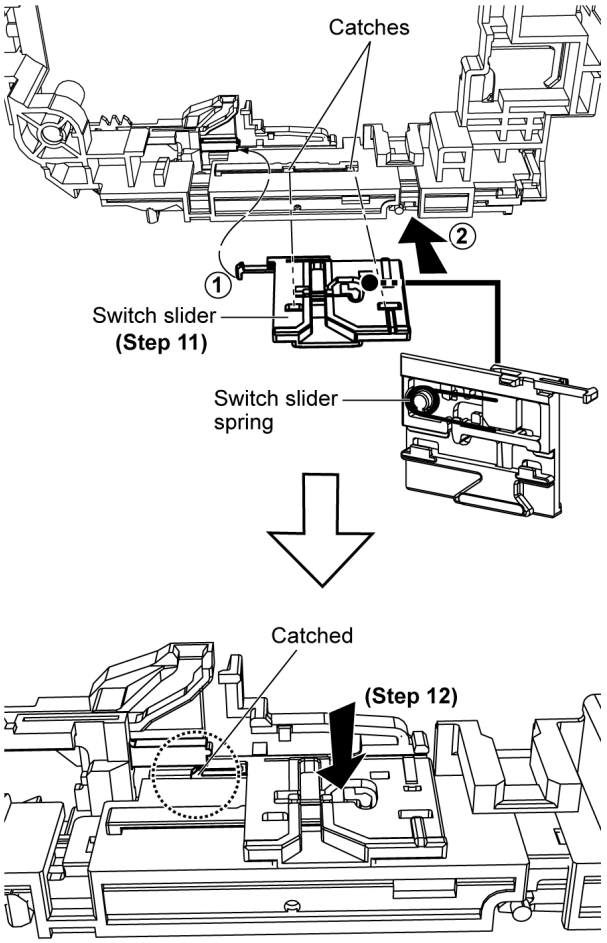
Step 8: Ensure both bosses align.

Step 9: Install load lever as shown, make sure the catch is fully catched.

• **Assembly of Switch Slider**



Step 10: Push the guide until it stop.

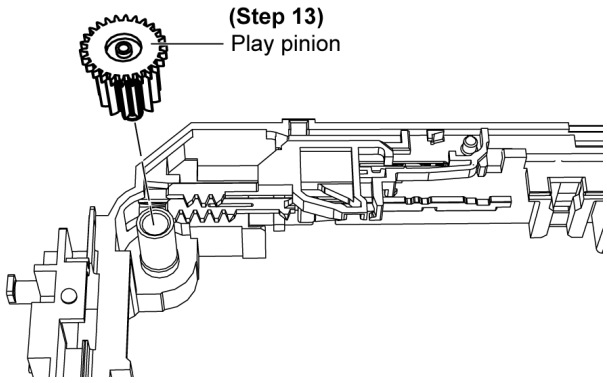


Step 11: Fix the switch slider to the catches.

Note: Ensure the switch slider spring is fixed at the back of the switch slider.

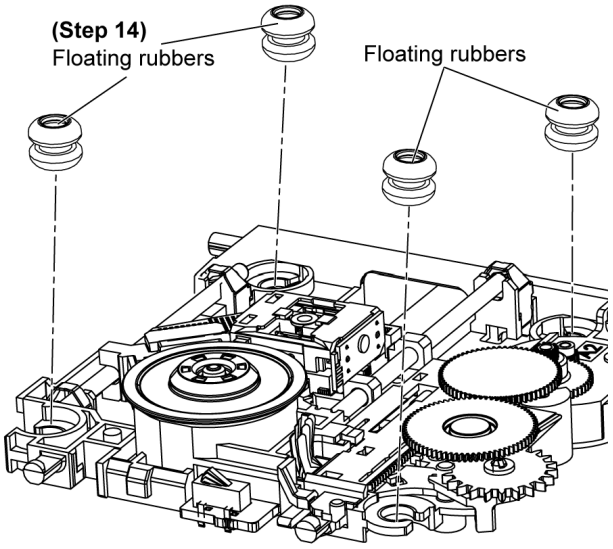
Step 12: Press down the switch slider and make sure it is fully catched onto the UD base.

- **Assembly of Play Pinion**

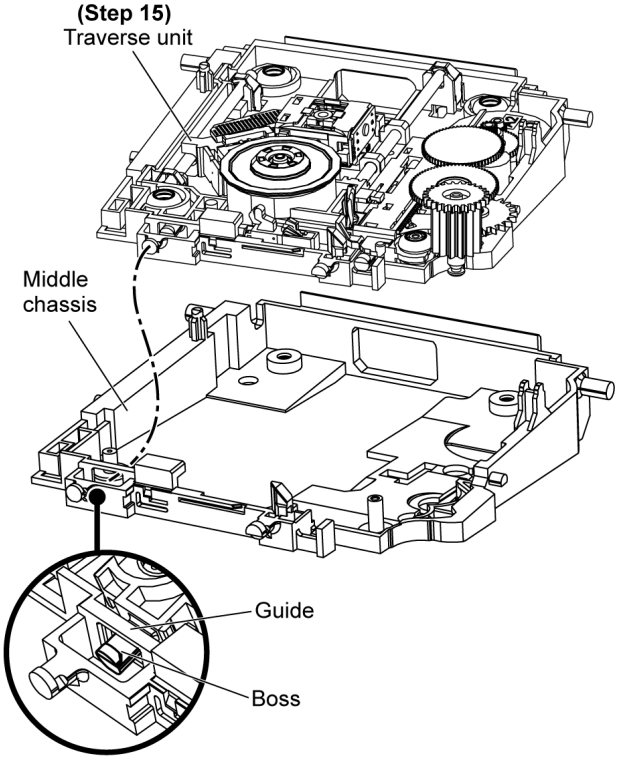


Step 13: Install the play pinion and press down.

- **Assembly of Traverse Unit**

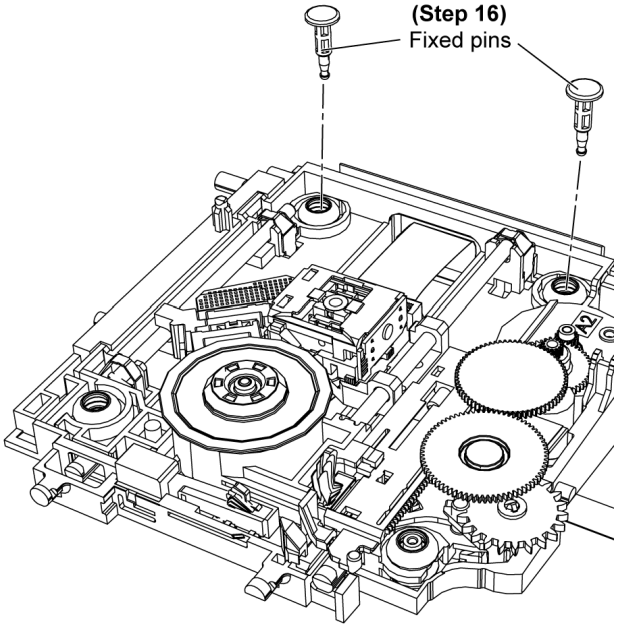


Step 14: Fix 4 floating rubbers.

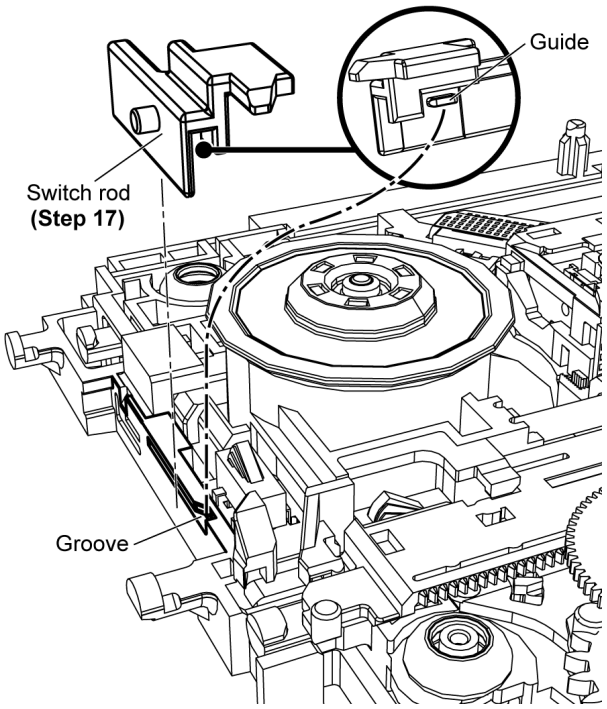


Step 15: Tilt and slot the Traverse unit onto the middle chassis.

Note: Ensure the boss fix exactly under the middle chassis's guide.

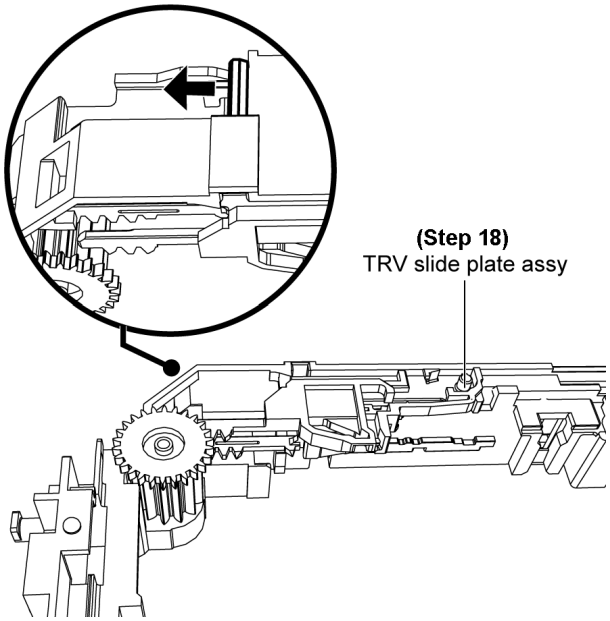


Step 16: Fix 2 fixed pins.

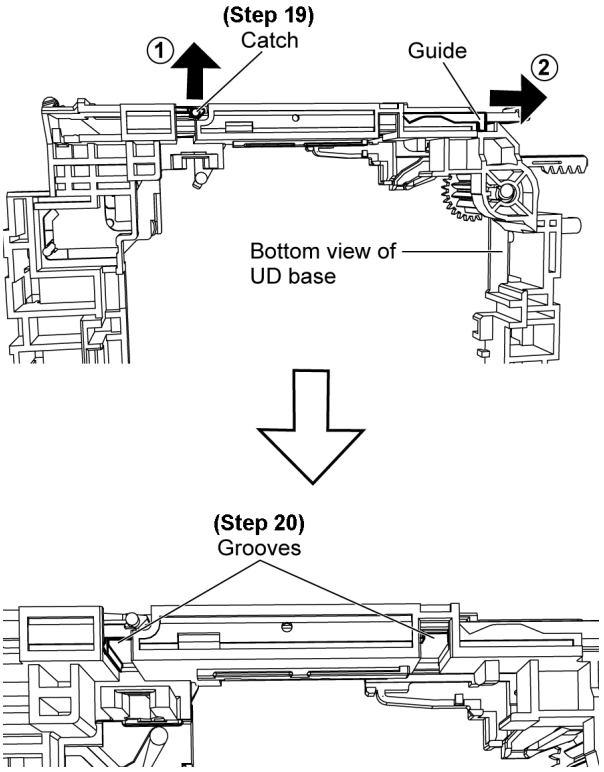


Step 17: Fix Switch rod, ensure the switch rod's guide seat properly onto the groove.

- **Assembly of Traverse Unit Assy**

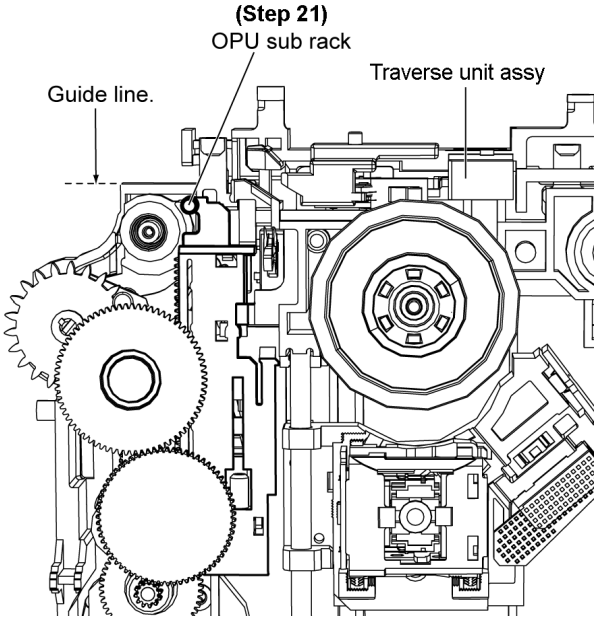


Step 18: Slide TRV slide plate assy to the end.

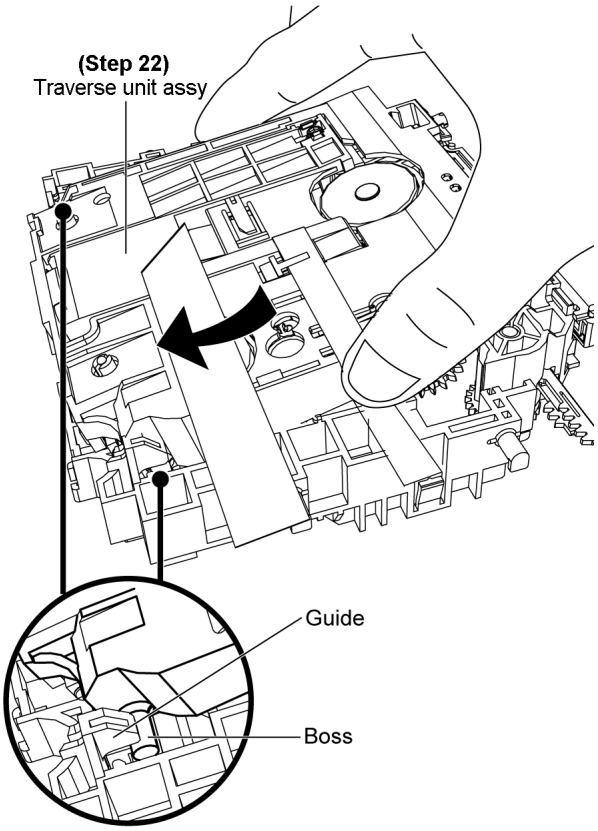


Step 19: Turn over the UD base, release catch and push the guide of the TRV slide plate as arrows shown.

Step 20: Ensure both grooves are open.

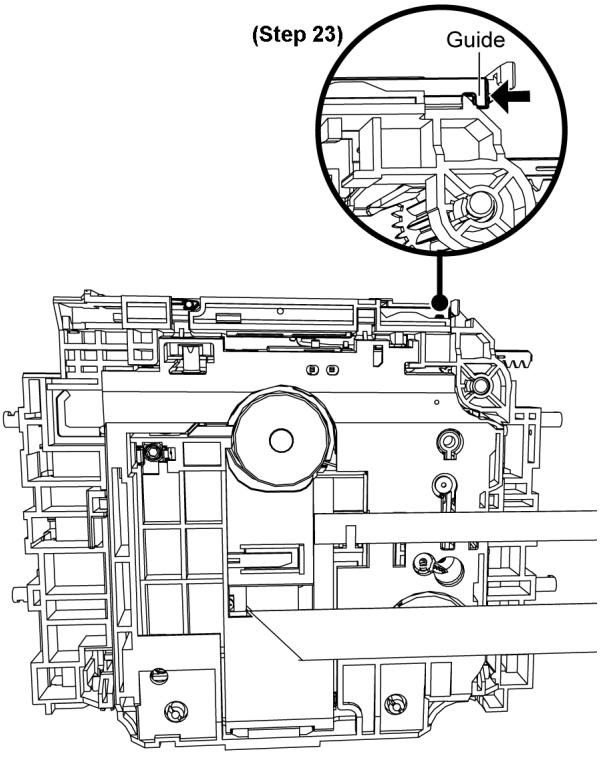


Step 21: Ensure the OPU sub rack is below the guide line.



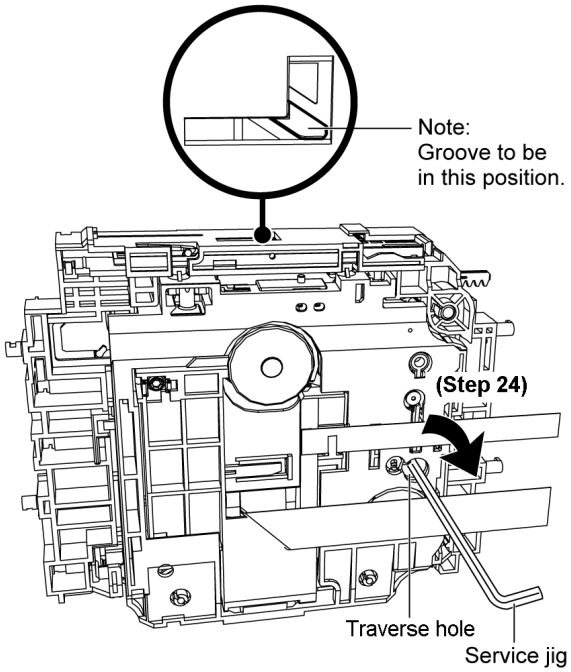
Step 22: Slot the traverse unit assy onto the UD base as arrow shown.

Note: Ensure the bosses fix exactly onto the guides.



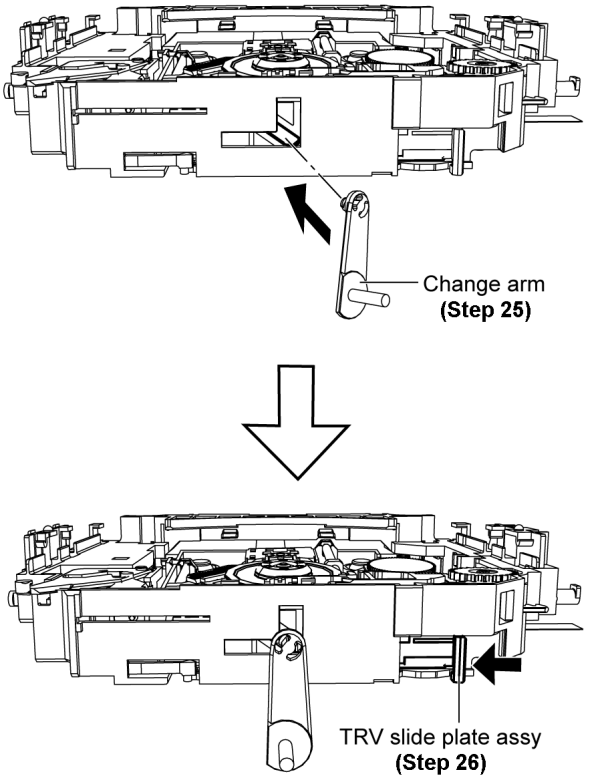
Step 23: Push the guide to lock the traverse unit assy in.

- **Assembly of Change arm**



Step 24: Insert service jig into the traverse hole, rotate the gear clockwise.

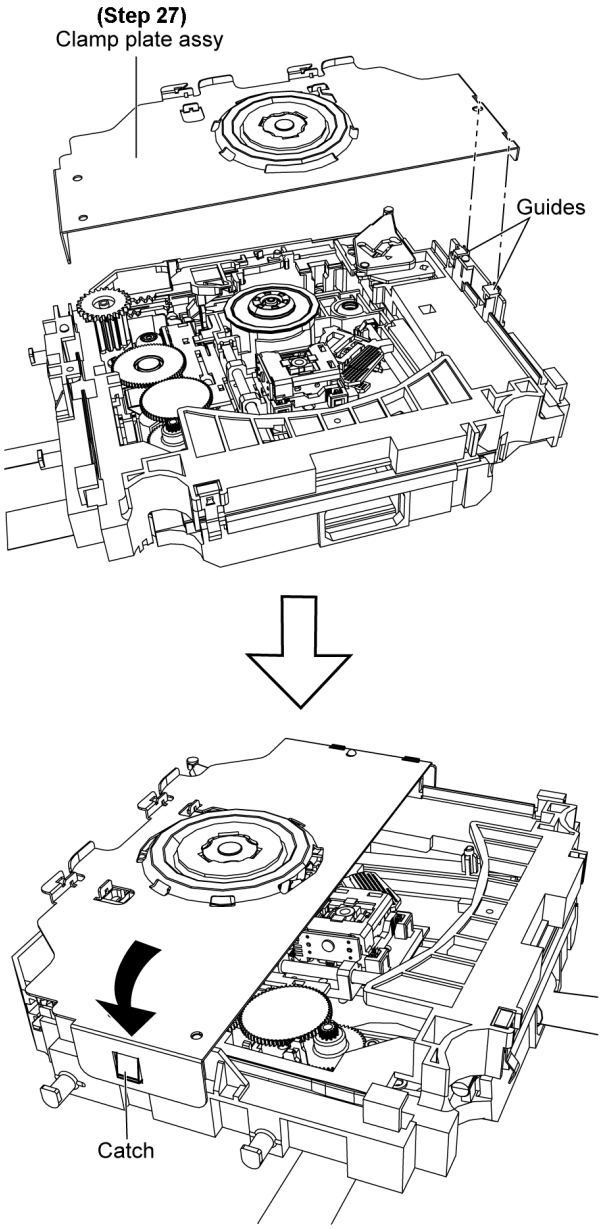
Note: Ensure the groove of the TRV slide plate assy stop at the position shown.



Step 25: Install the change arm to the groove of the TRV slide plate assy.

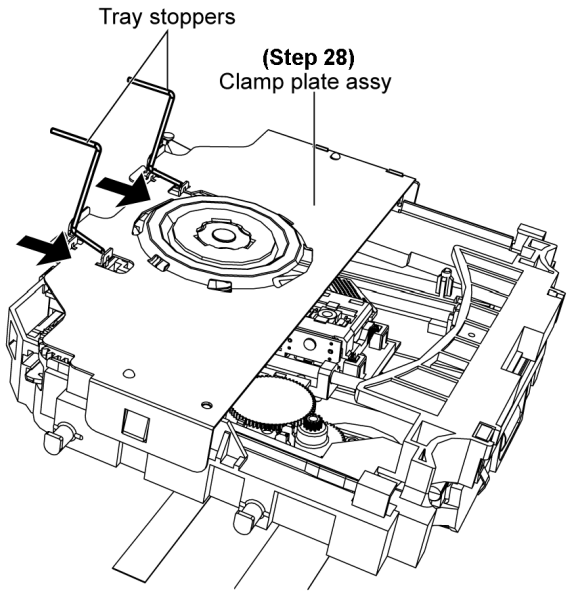
Step 26: Push the TRV slide plate assy as arrow shown to lock the change arm.

• **Assembly of Clamp Plate Assy**



Step 27: Fix the clamp plate assy align to both guides, make sure the catch is fully catched.

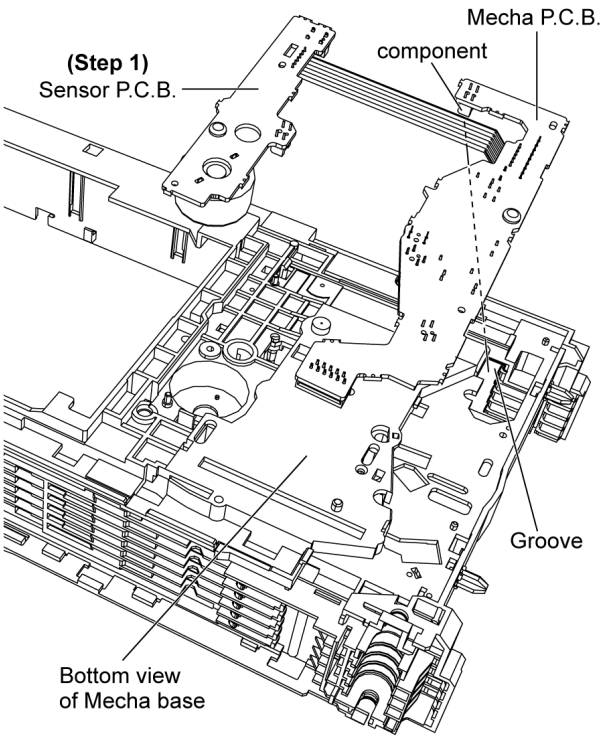
• **Assembly of Tray Stoppers**



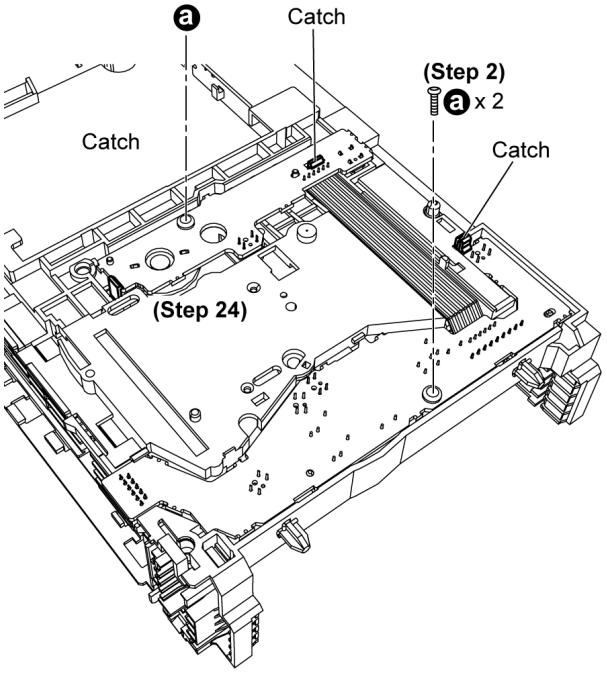
Step 28: Fix the tray stoppers.

10.3.2. Assembly of Mecha Base Unit Parts

• **Assembly of Mecha P.C.B. and Sensor P.C.B.**

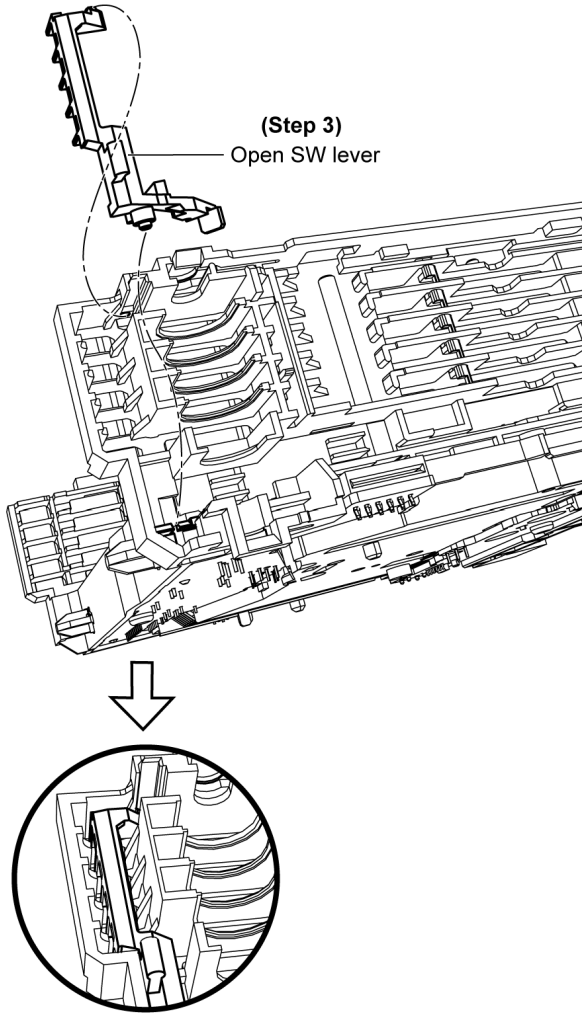


Step 1: Align the component of Mecha P.C.B. to the groove.



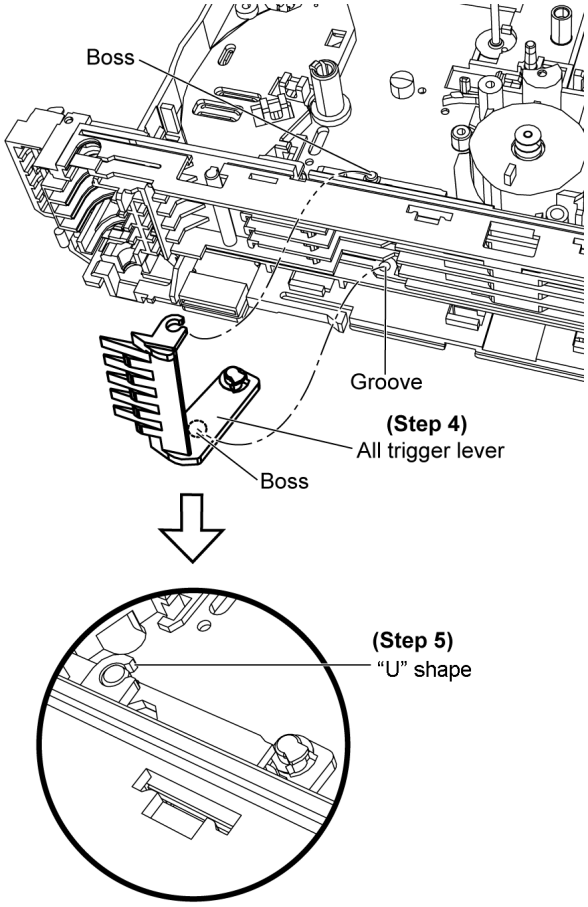
Step 2: Ensure all catches are hooked to the Mecha P.C.B. and Sensor P.C.B. then fix 2 screws.

- **Assembly of Open Switch Lever**



Step 3: Install open SW lever.

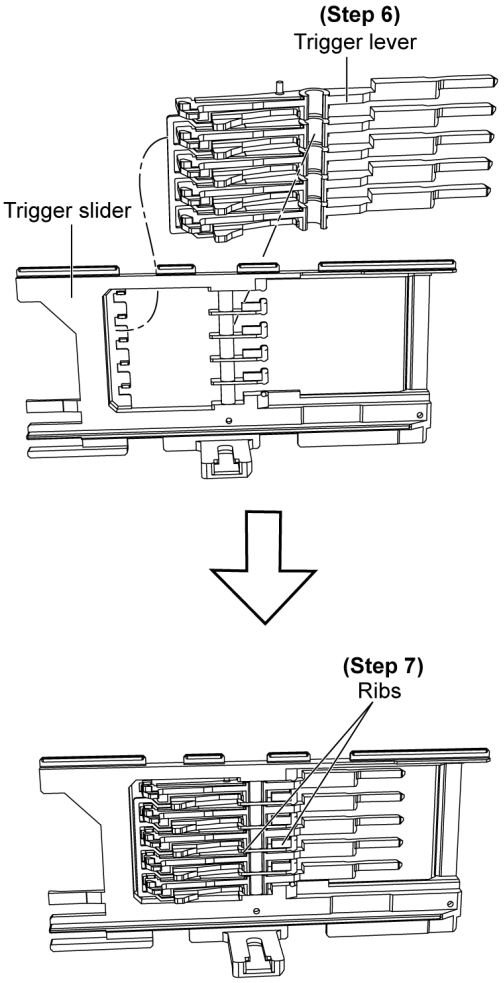
- **Assembly of All Trigger Lever**



Step 4: Ensure all trigger lever's boss seated properly onto the groove.

Step 5: Ensure the "U" shape of the all trigger lever snap to the boss.

- **Assembly of Trigger Slider Assy**

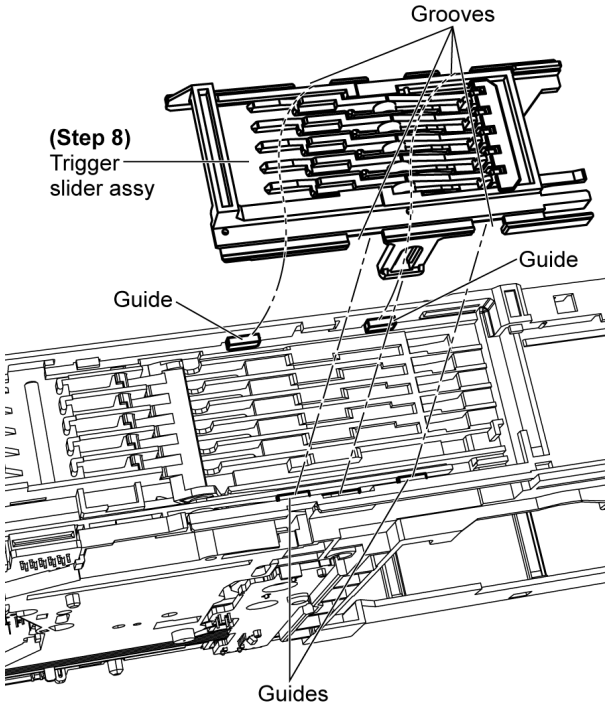


Step 6: Combine both trigger slider and trigger lever.

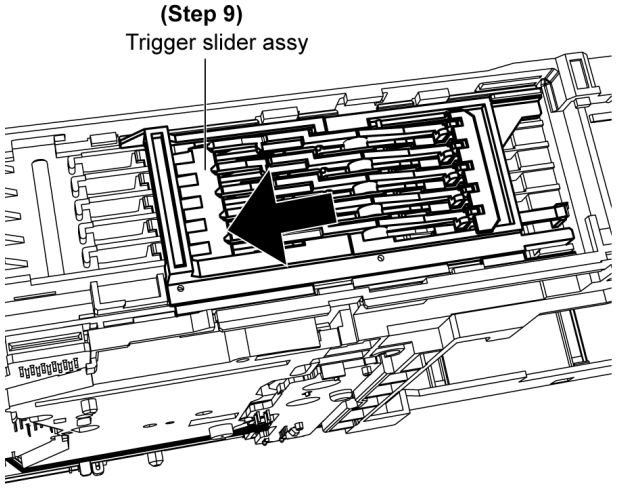
Step 7: Ensure trigger lever's ribs seated properly onto the grooves.

Caution:

Do not exert force as it may cause damage to the trigger lever.

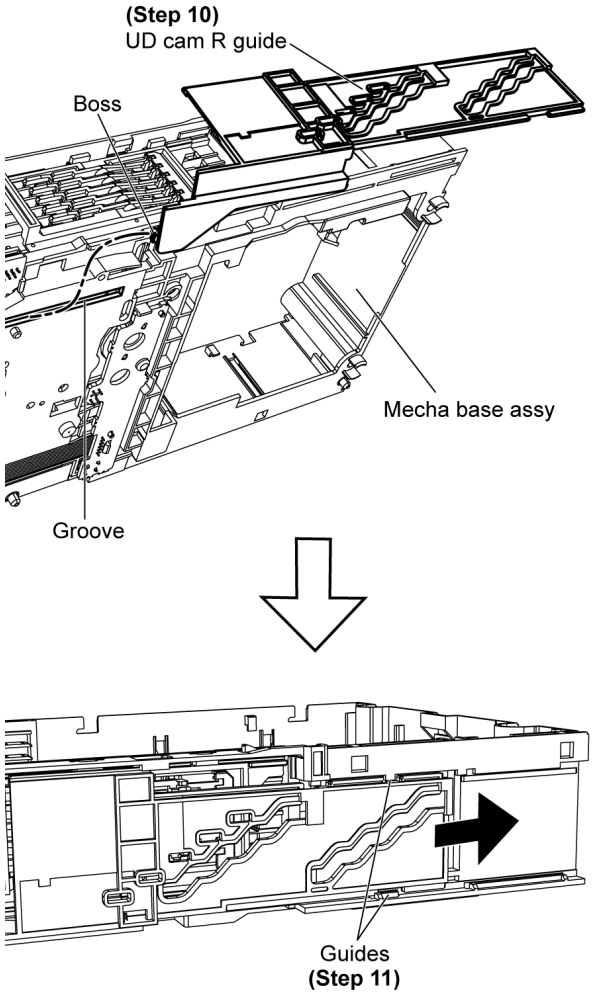


Step 8: Install trigger slider assy, make sure the grooves fix exactly onto the guides.



Step 9: Slide the trigger slider assy.

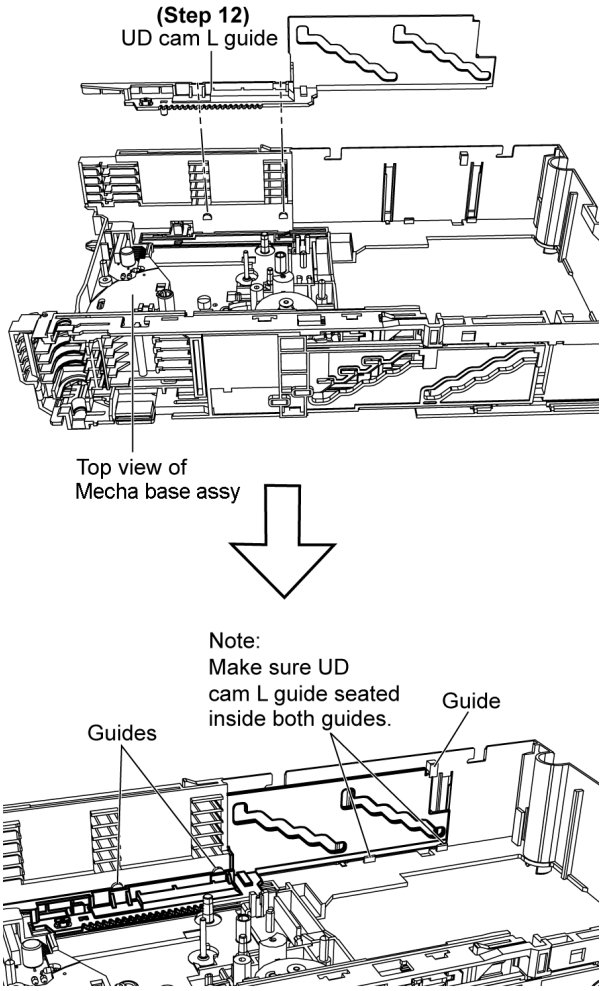
• **Assembly of UD Cam R Guide**



Step 10: Insert the boss of the UD cam R guide onto mecha base assy's groove.

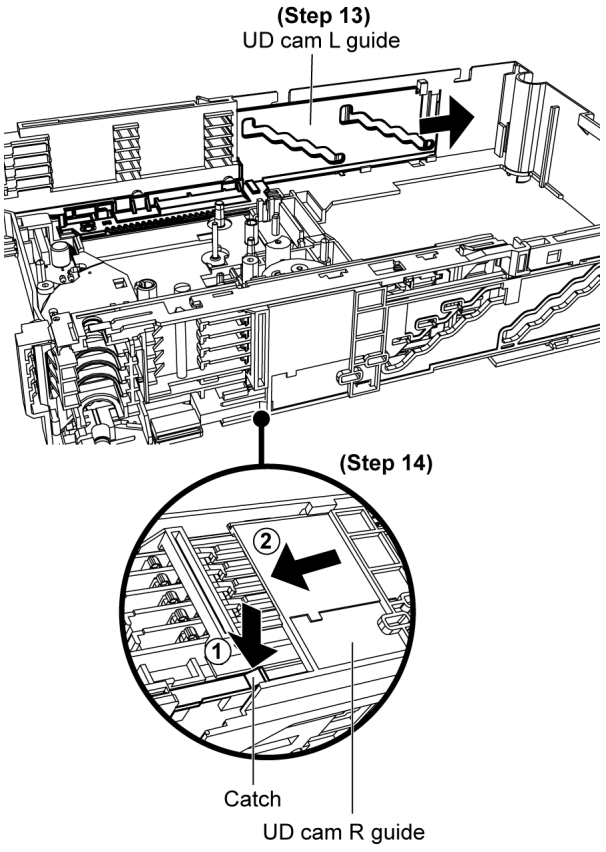
Step 11: Ensure UD cam R guide seated properly onto the guides and slide as arrow shown.

• **Assembly of UD Cam L Guide**



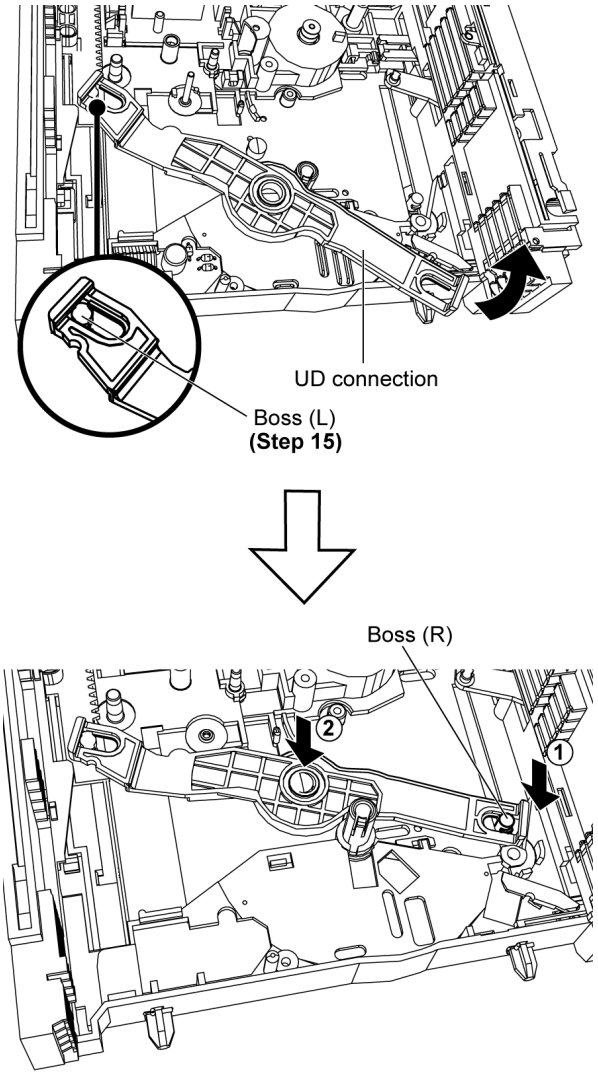
Step 12: Install UD cam L guide align with all guides.

- **Assembly of UD Connection**



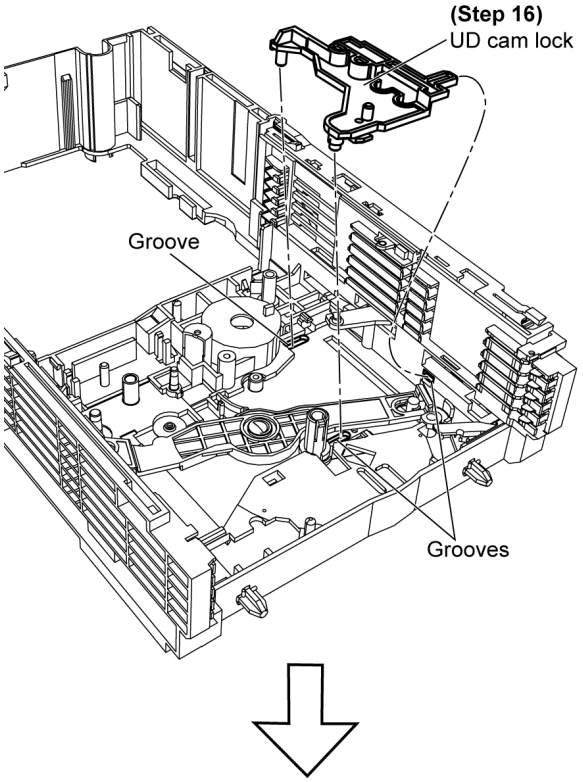
Step 13: Slide the UD cam L guide until it stop as arrows shown.

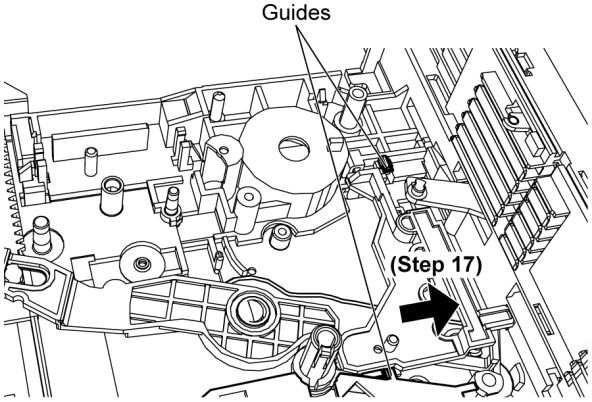
Step 14: Push the catch and slide the UD cam R guide as arrows shown.



Step 15: Slot the UD connection onto the boss (L) and turn to the direction as arrow shown to slot onto boss (R) to install it.

• **Assembly of UD Cam Lock**

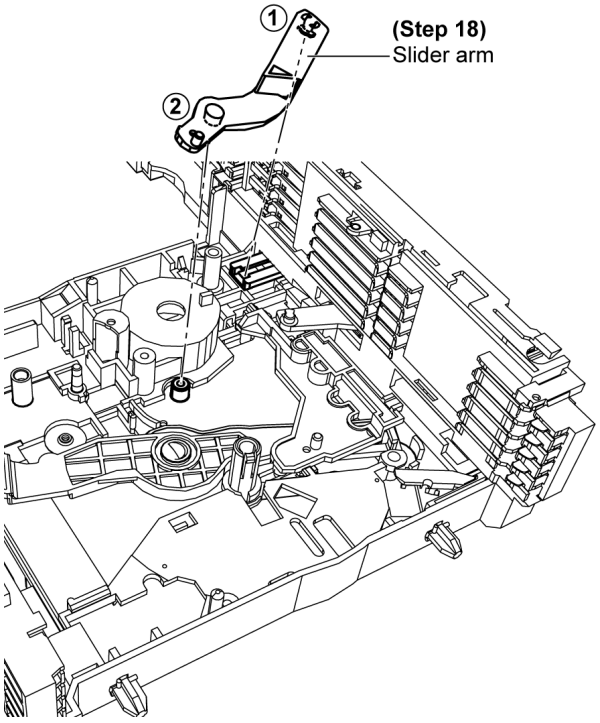




Step 16: Slot cam lock onto the grooves.

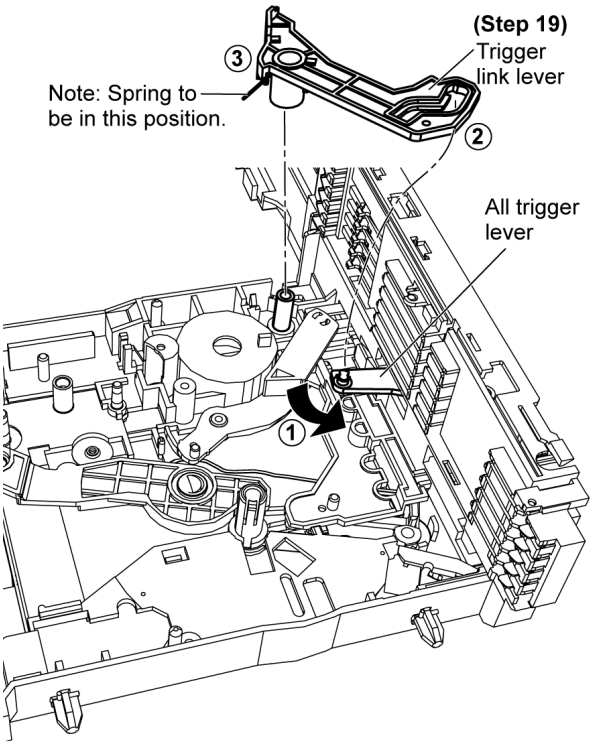
Step 17: Move the UD cam lock as arrow shown, make sure the UD came lock is underneath both guides.

• **Assembly of Slider Arm**

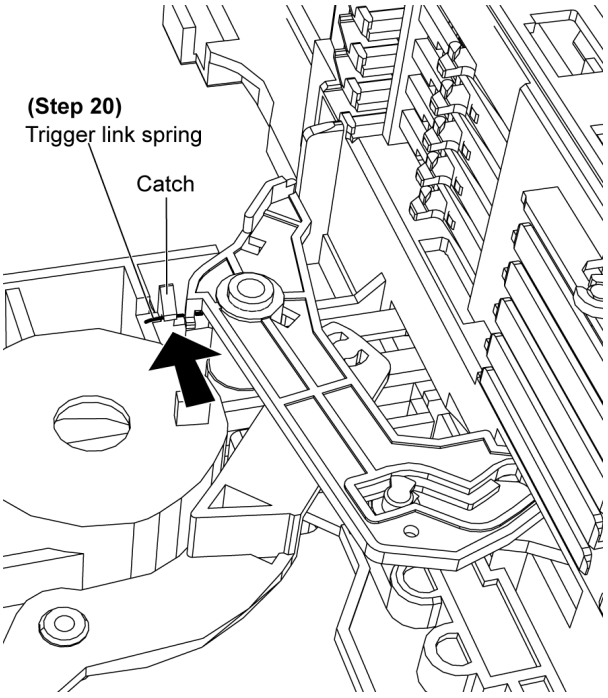


Step 18: Install the slider arm.

• **Assembly of Trigger Link Lever**

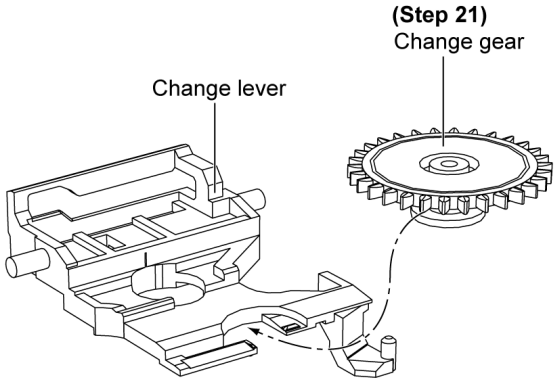


Step 19: Slide and hold the all trigger lever as arrow shown followed by Install the trigger link lever.

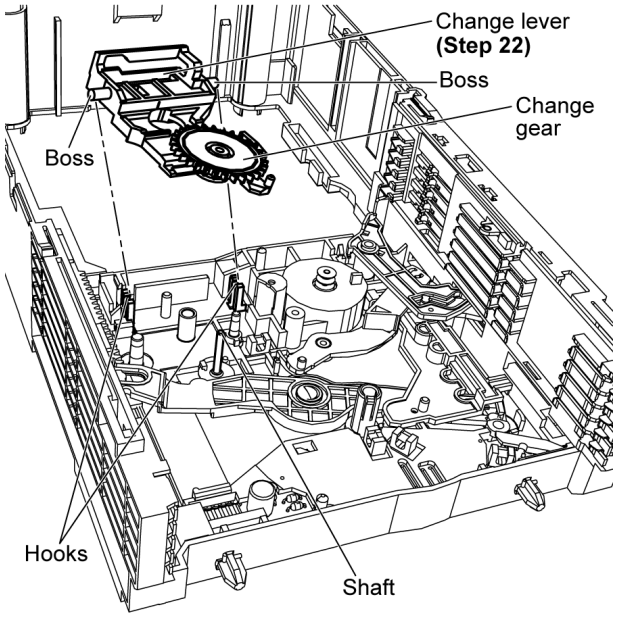


Step 20: Make sure the trigger link spring is hooked underneath the catch.

- **Assembly of Change Lever and Change Gear**

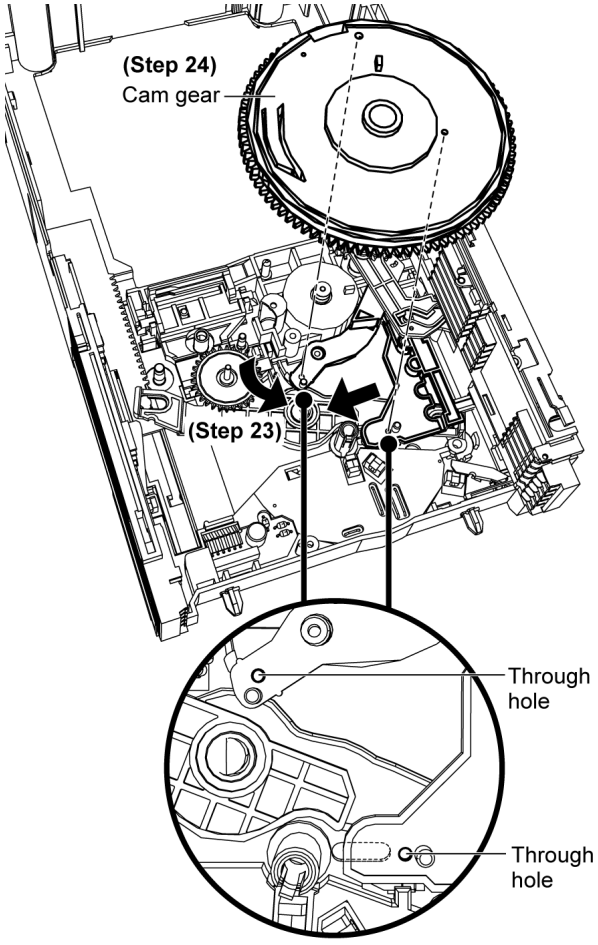


Step 21: Slot the change gear onto the change lever.



Step 22: Align change gear to the shaft and snap both bosses of the change lever to the hooks.

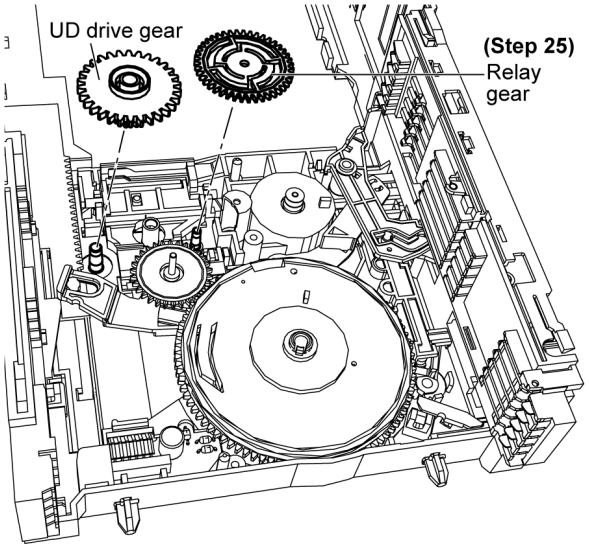
- **Assembly of Cam Gear**



Step 23: Adjust both parts to align with the underneath holes.

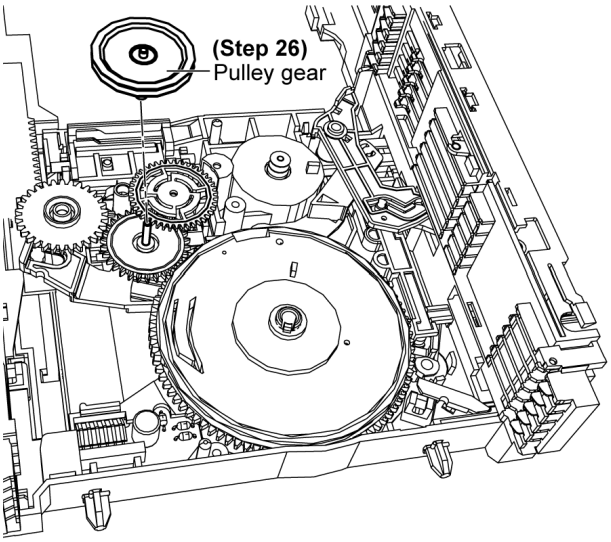
Step 24: Align the holes and press down until it “click”.

• **Assembly of Relay Gear and UD Drive Gear**

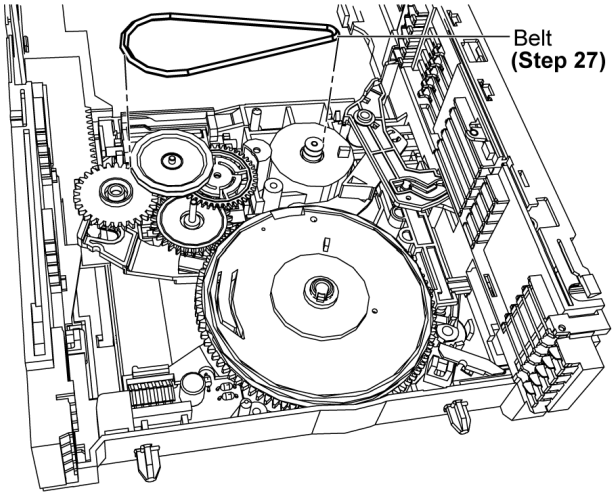


Step 25: Install relay gear and UD drive gear respectively.

• **Assembly of Pulley Gear and Belt**

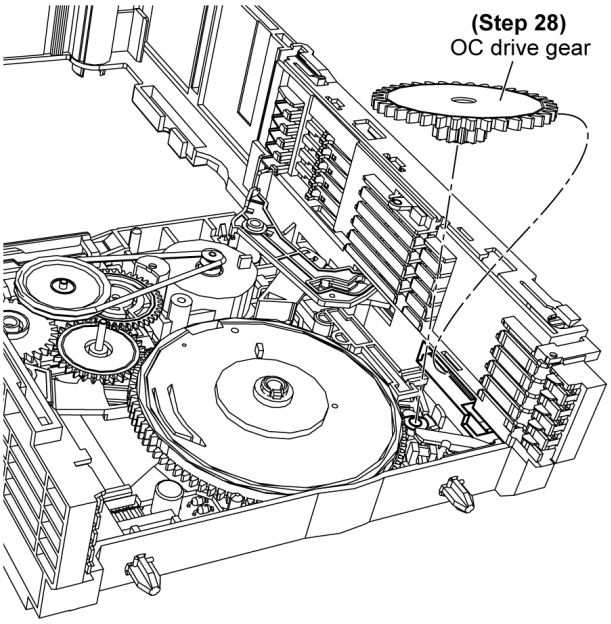


Step 26: Install pulley gear.



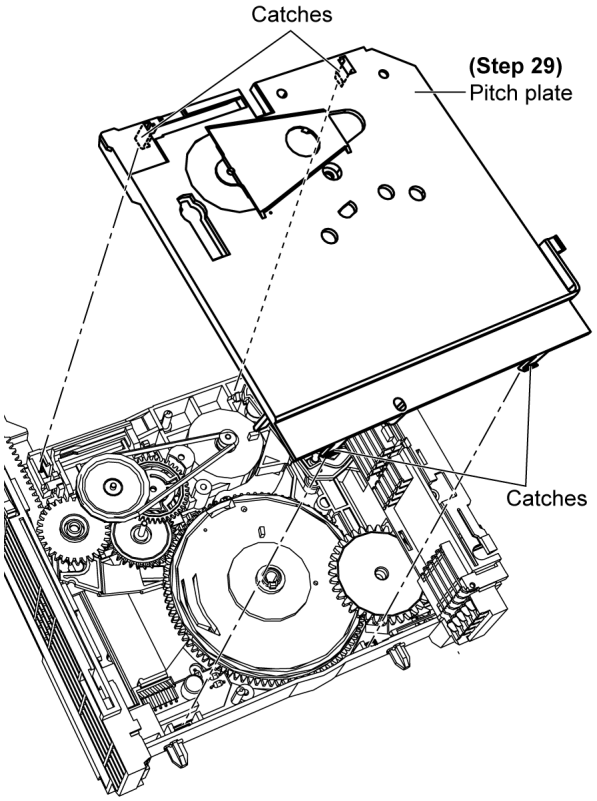
Step 27: Install belt.

• **Assembly of OC Drive Gear**

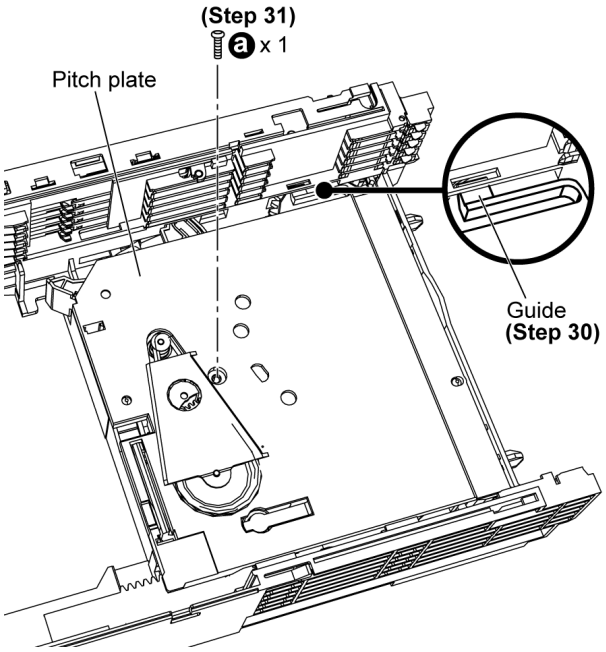


Step 28: Install OC drive gear.

• **Assembly of Pitch Plate**



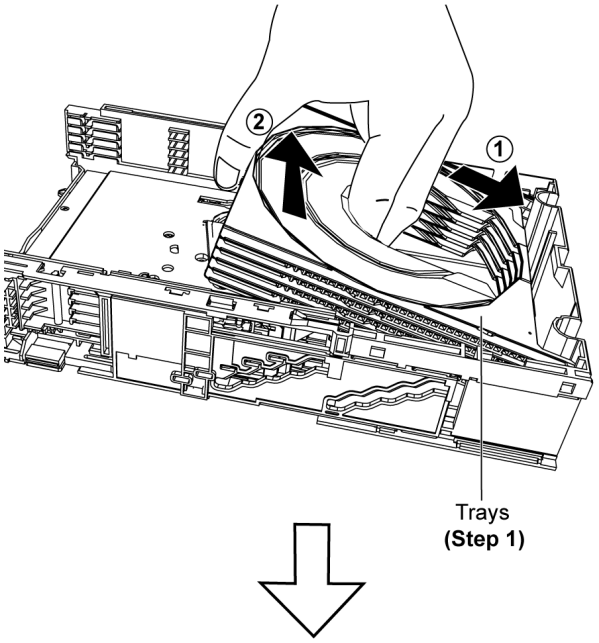
Step 29: Install the pitch plate, ensure all the catches hooked onto the mecha base assy.

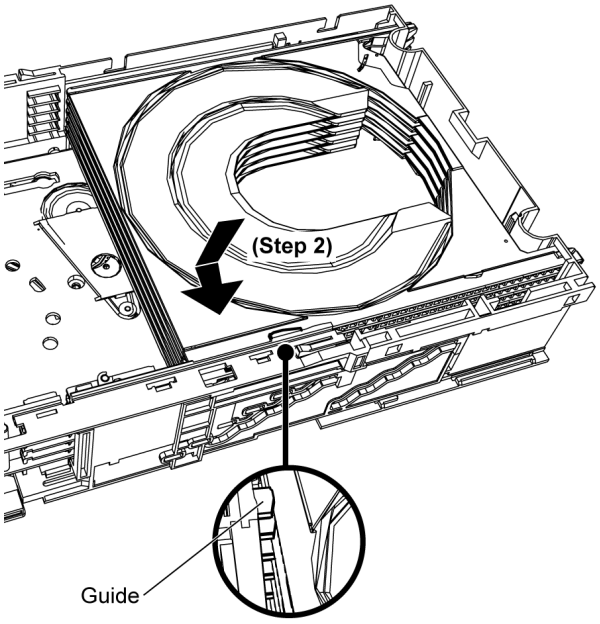


Step 30: Ensure the guide is underneath the mecha base assy.

Step 31: Fix 1 screw.

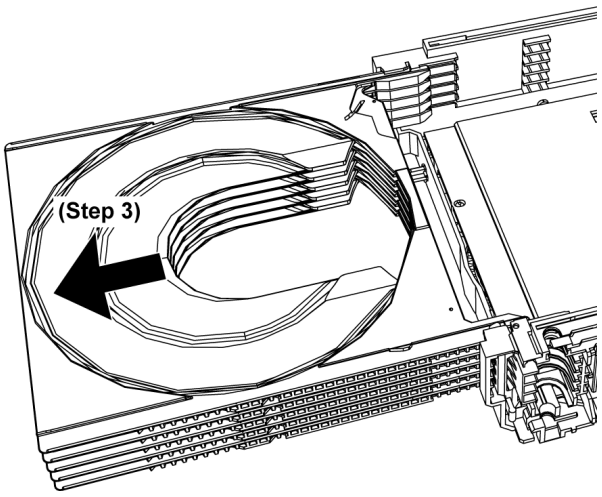
10.3.3. Assembly of Trays



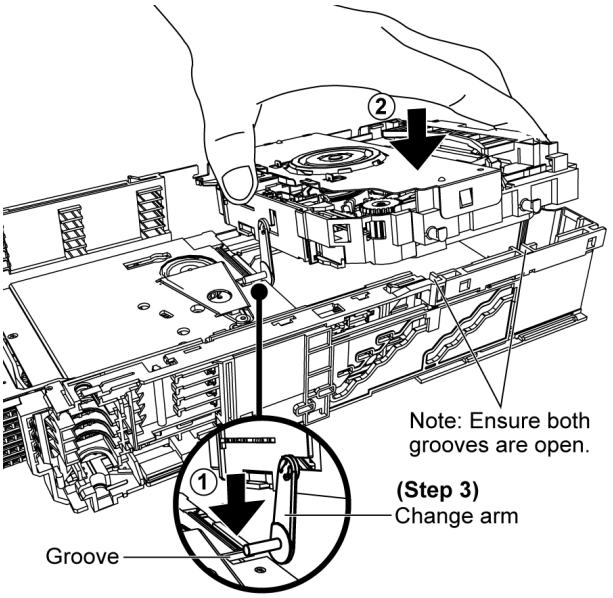


Step 1: Slot and tilt the trays as arrows shown.

Step 2: Place down the trays and position underneath their respective guides.

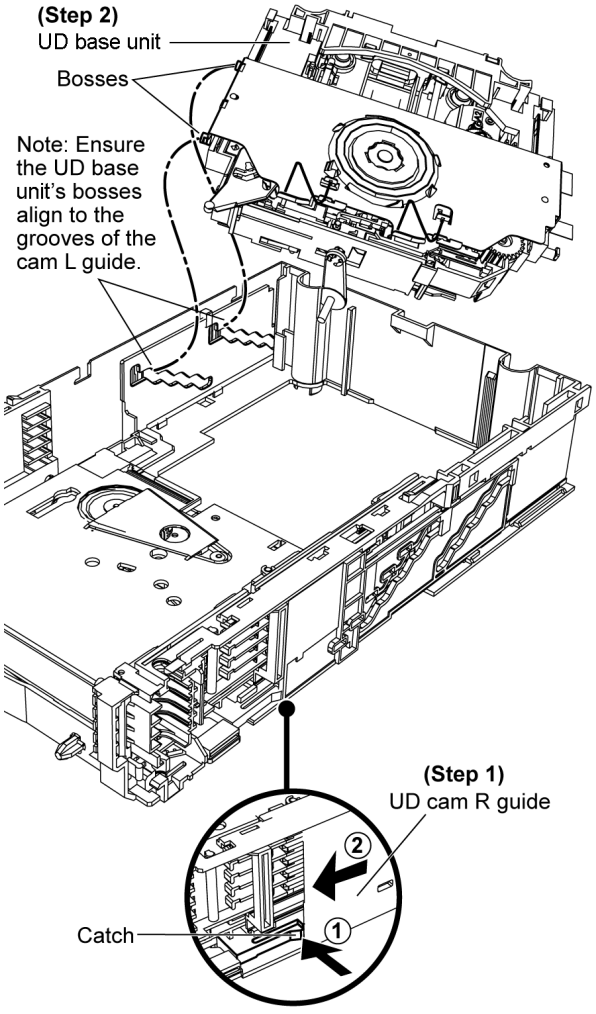


Step 3: Push the trays out.



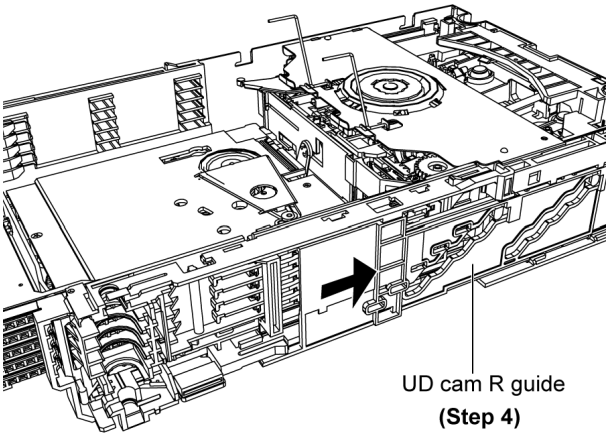
Step 3: Ensure the change arm slot onto the groove then place down the UD base unit into the open grooves.

10.3.4. Assembly of UD Base Unit

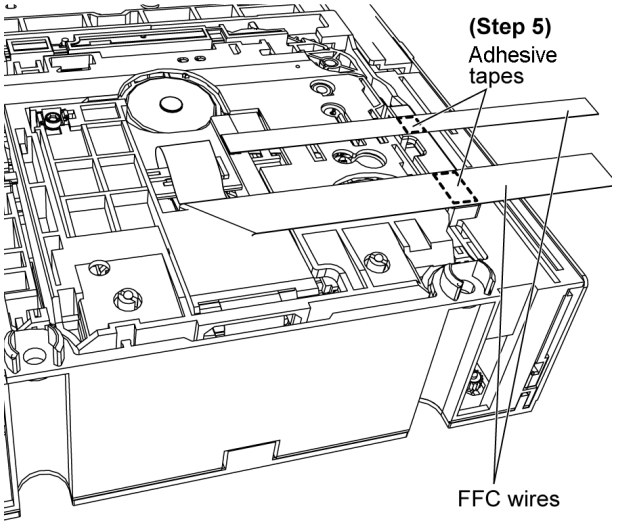


Step 1: Push the catch and slide the UD cam R guide as arrows shown.

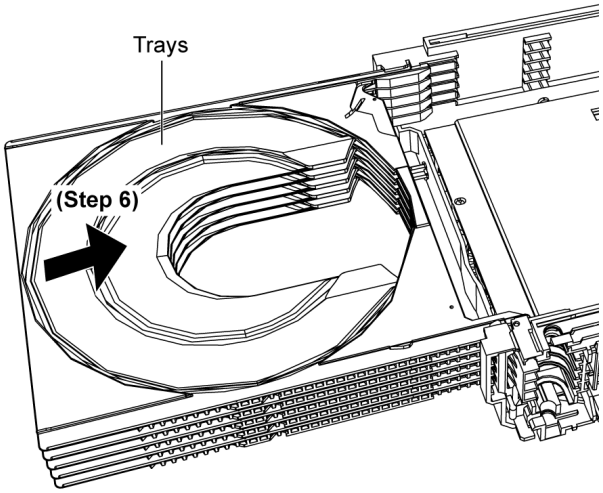
Step 2: Slot the UD base unit into the grooves.



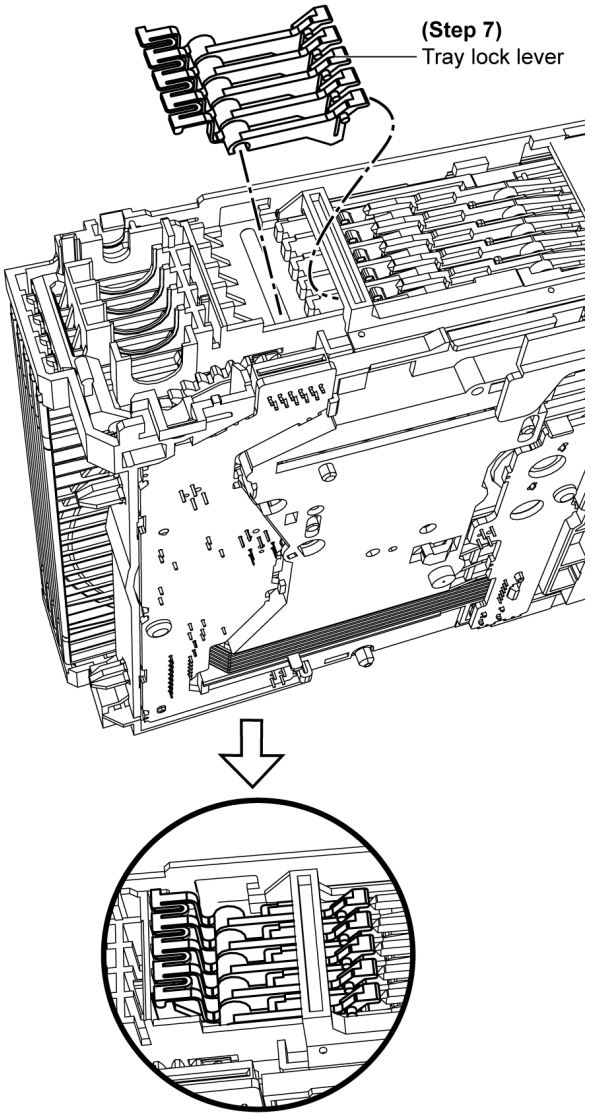
Step 4: Slide the UD cam R guide as arrow shown to lock in the UD base unit.



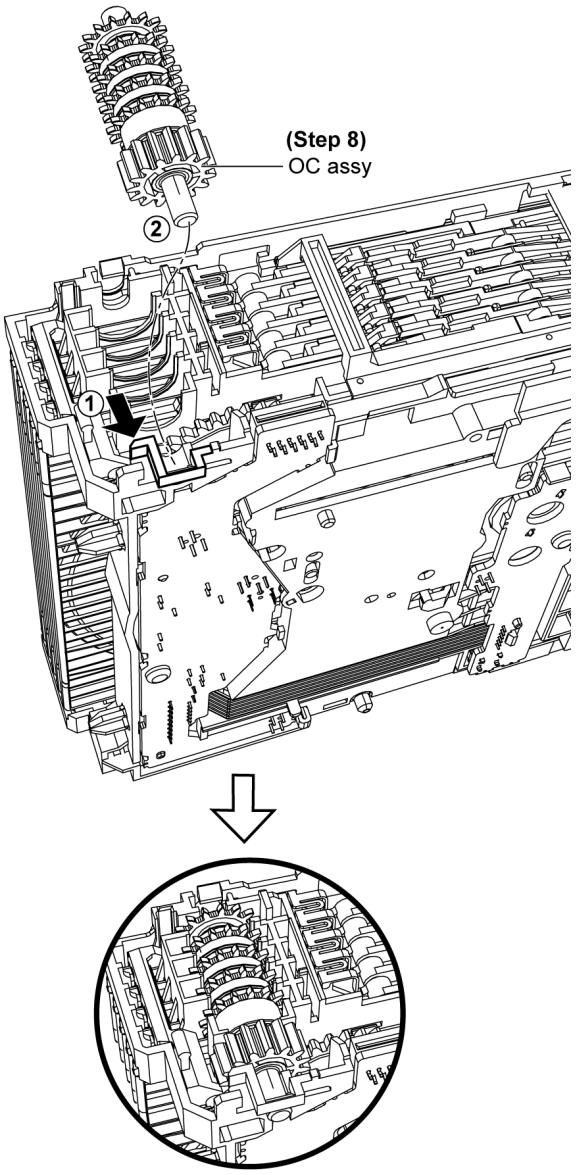
Step 5: Turn over the set and fix the FFC wires by using the adhesive tapes.



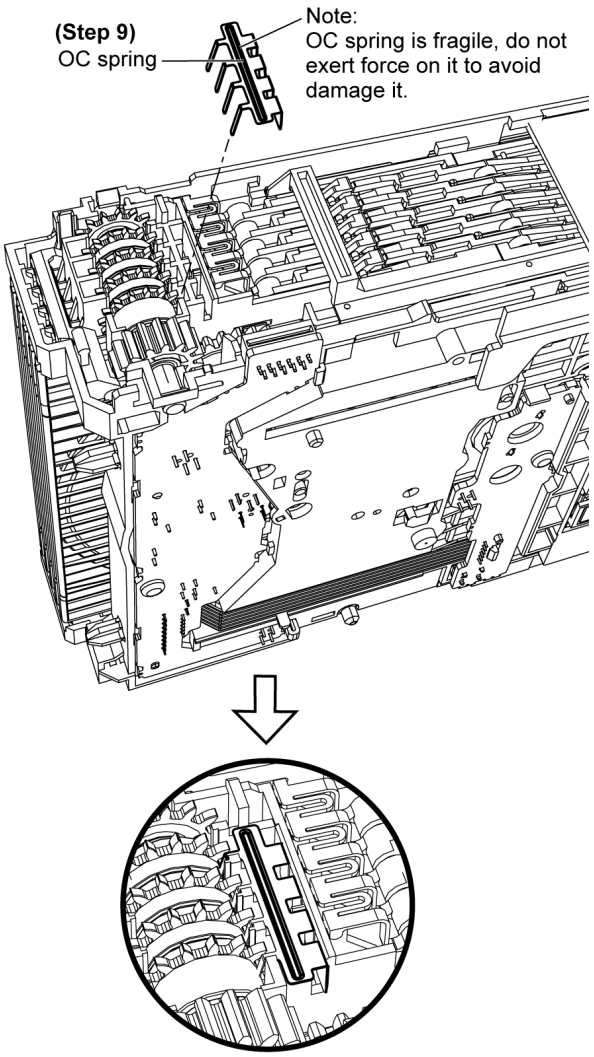
Step 6: Push in the trays.



Step 7: Install tray lock lever.



Step 8: Install OC assy.



Step 9: Install OC spring.

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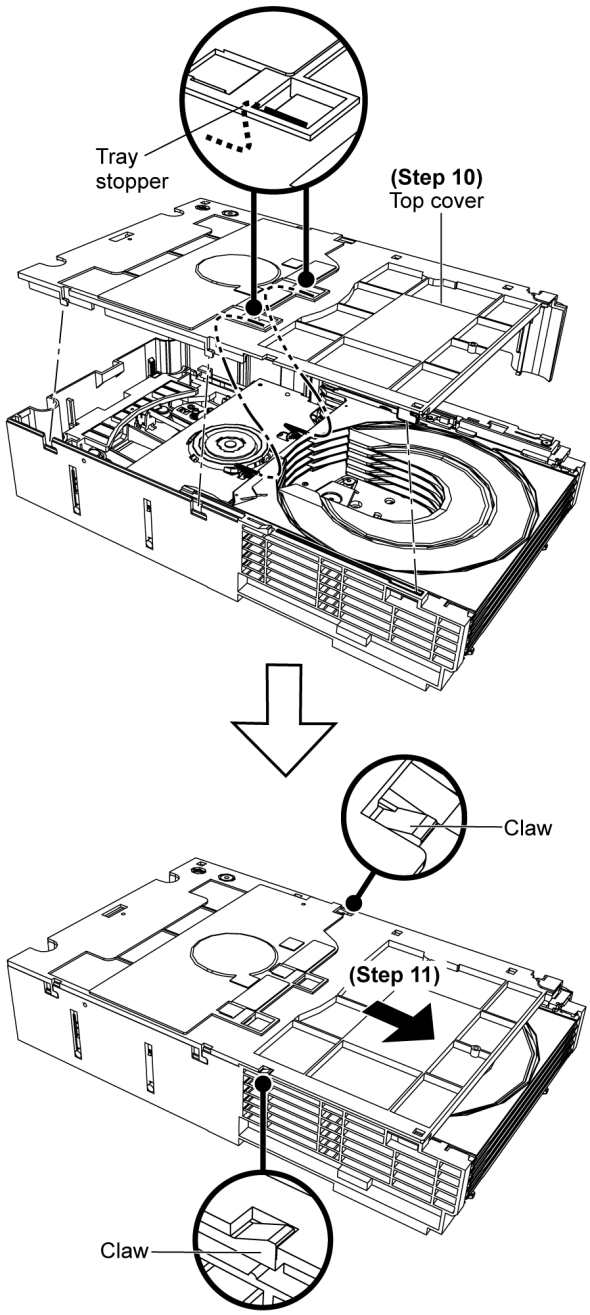
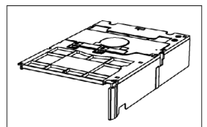


Step 10: Attach the top cover to the tray stoppers.

Step 11: Slide the top cover as arrow shown.

Note: Ensure both claws are catched.

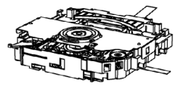
11 Disassembly Flow


1. Top cover

2. OC spring

3. OC assy

4. Tray lock lever


5. UD base unit

6. Tray stoppers

7. Trays

8. Pitch plate

9. OC drive gear

10. Belt

11. Pulley gear

12. UD drive gear

13. Relay gear

14. Cam gear

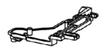
15. Change lever

16. Change gear

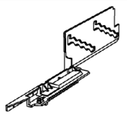
17. Trigger link lever

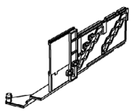
18. Trigger link spring

19. Slider arm


20. UD cam lock

21. UD connection


22. UD cam L guide

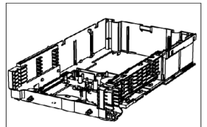

23. UD cam R guide

24. Trigger slider assy

25. Open SW lever

26. All trigger lever

27. Mecha P.C.B. & Sensor P.C.B.


28. Mecha base assy

29. Clamp plate assy

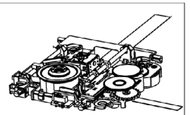
30. Change arm

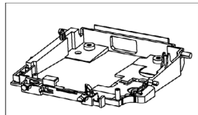
31. Load lever

32. Switch rod

33. Fixed pin

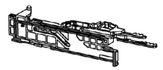
34. Floating rubber


35. Traverse unit


36. Middle chassis

37. Play pinion

38. Switch slider


39. TRV slide plate assy

40. Load plate

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12 Notes of Schematic Diagram

(All schematic diagrams may be modified at any time with the development of new technology)

Note :

SW3 Top switch

- **Importance safety notice :**

  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacturer´s specified parts shown in the parts list.

- **Resistor**

  Unit of resistance is OHM [Ω] (K=1,000,000).

- **Capacitor**

  Unit of resistance is μF, unless otherwise noted. F=Farad, pF=Pico-Farad

- ***For Indication only.**

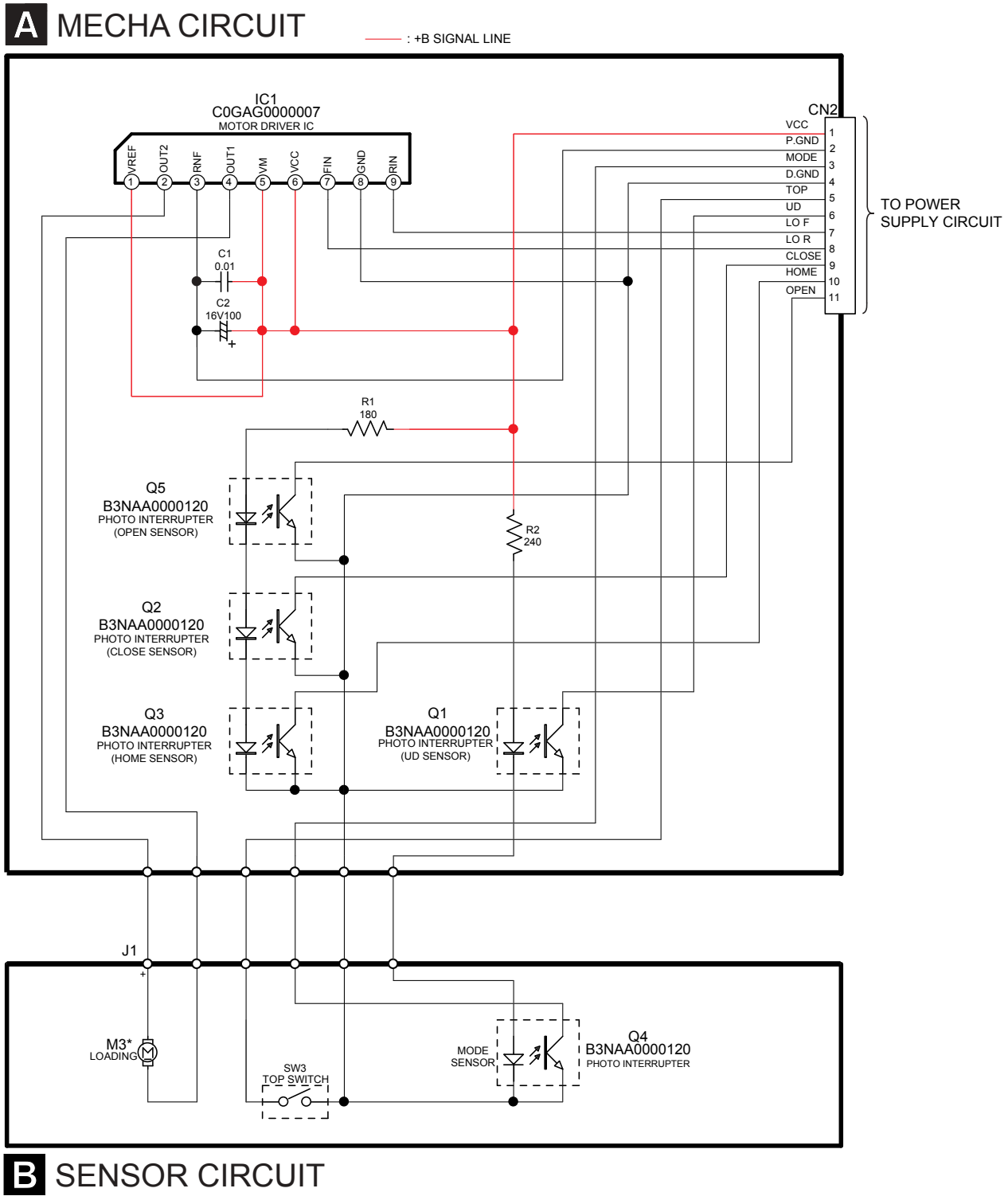
- **Voltage and Signal lines:**

  ▬▬ : +B Signal line

13 Schematic Diagram

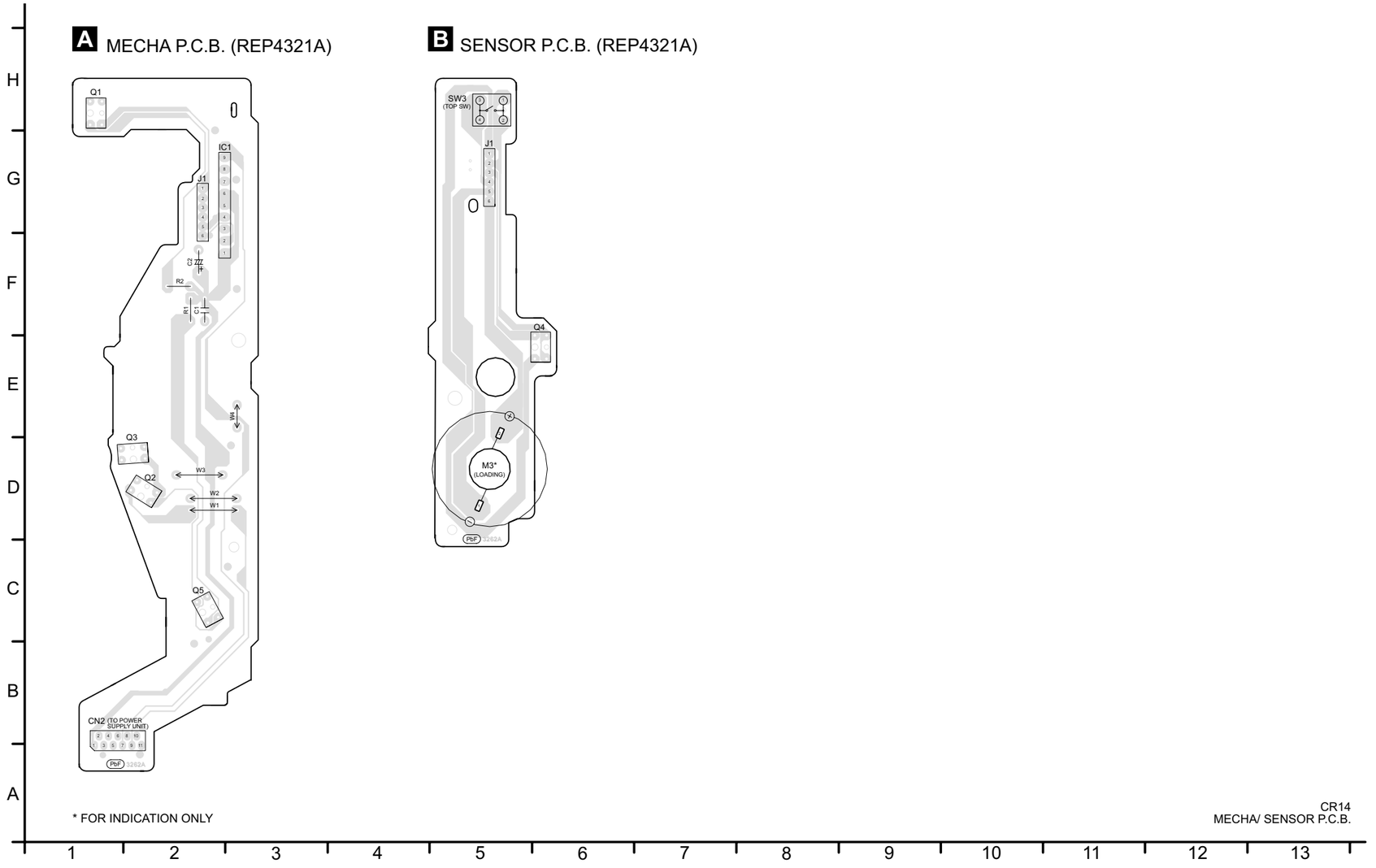
13.1. Mecha Circuit & Sensor Circuit

SCHEMATIC DIAGRAM - 1



14 Printed Circuit Board

14.1. Mecha P.C.B. & Sensor P.C.B.



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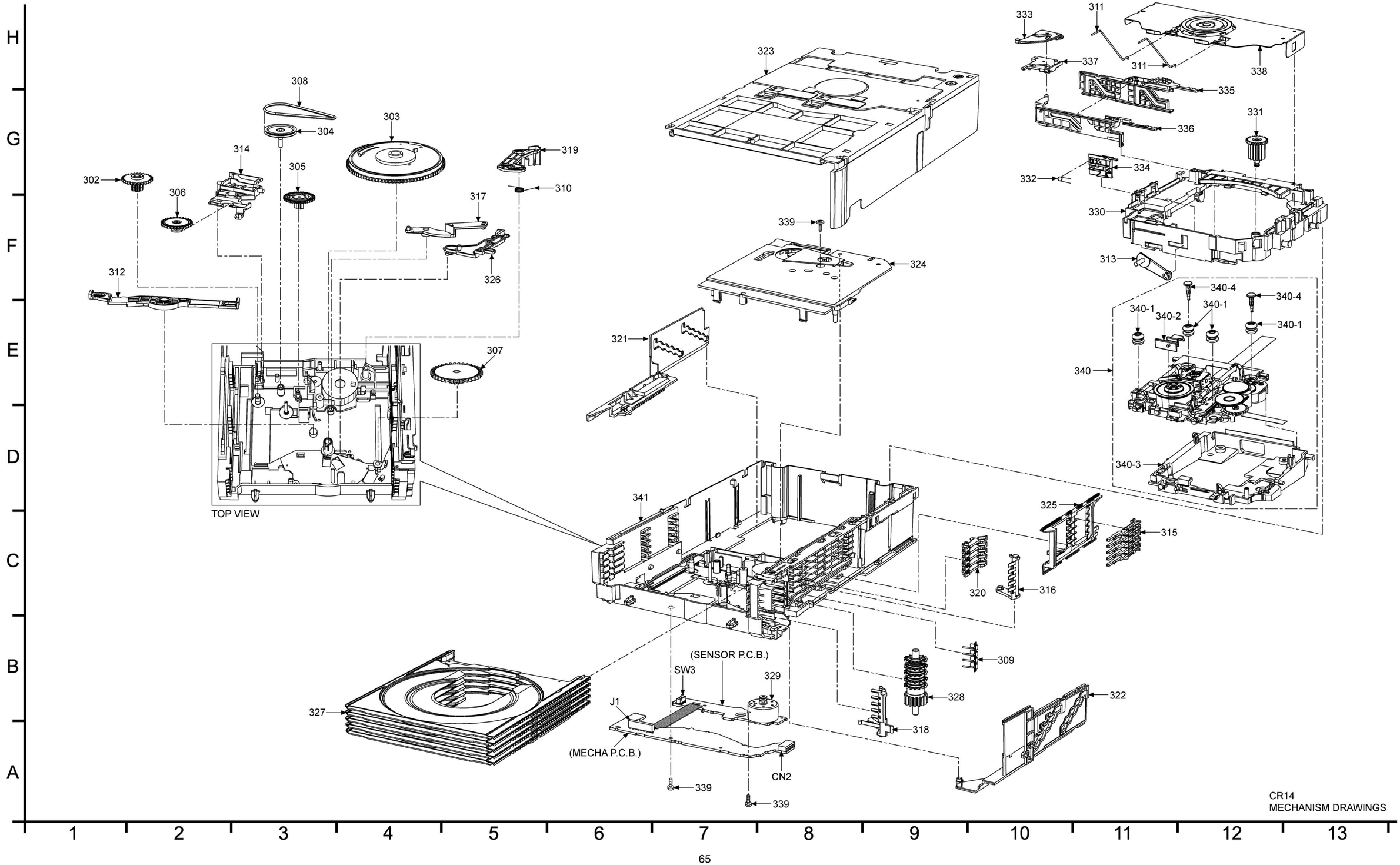
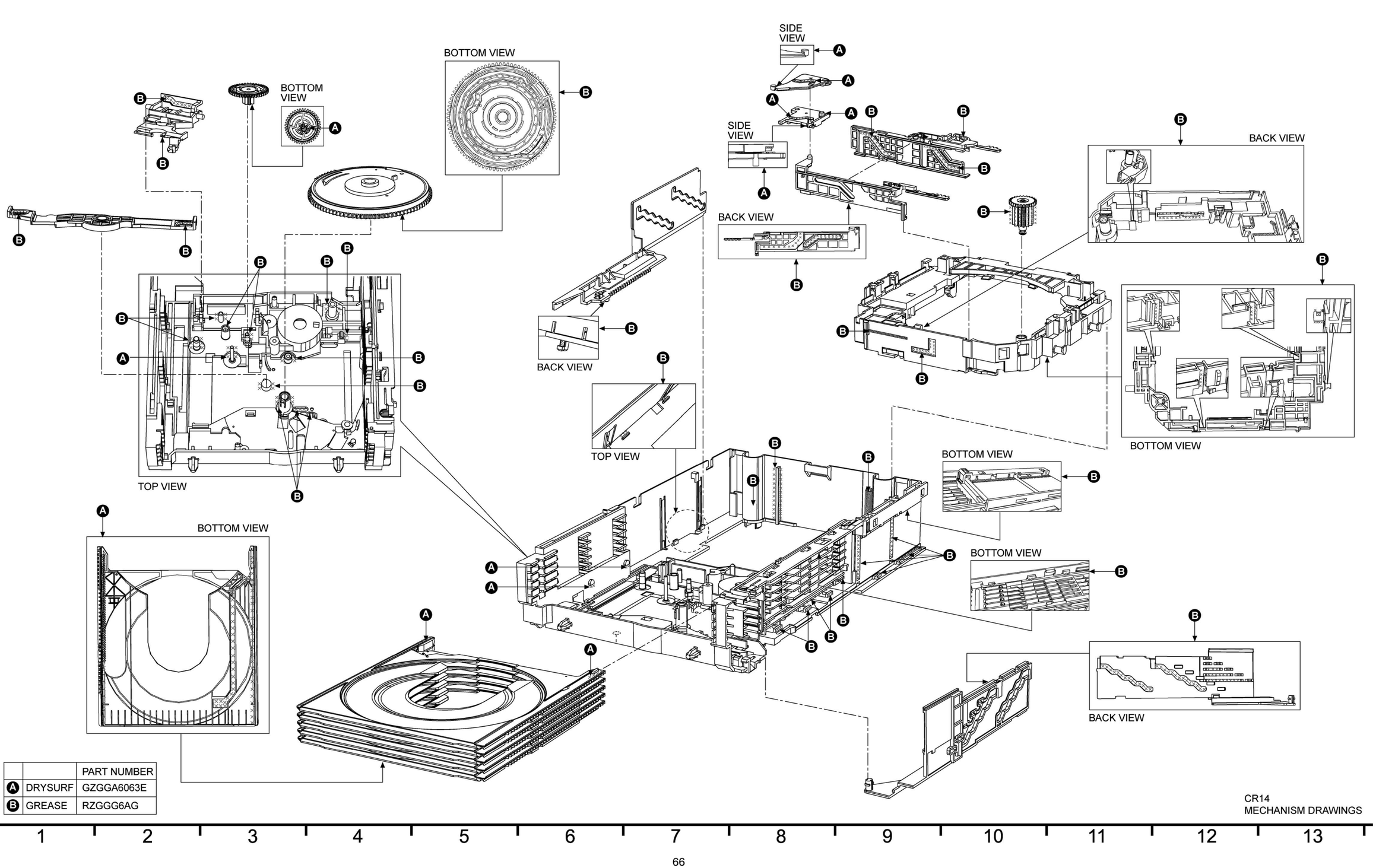
15 Exploded Views

15.1. Cabinet Parts Location and Grease/Drysurf Location





		PART NUMBER
A	DRYSURF	GZGGA6063E
B	GREASE	RZGGG6AG

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MECHANISM DRAWINGS

16 Replacement Parts List

Notes:

- Important safety notice:

  Components identified by ⚠ mark have special characteristics important for safety.

  Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

  When replacing any of these components, be sure to use only manufacturers's specified parts shown in the parts list.
- Capacitor values are in microfarad (μF) unless specified otherwise, P=Pico-farads(pF); Farads.
- Resistance values are in ohms, unless specified otherwise, 1K=1,000(ohms).
- The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.
- [M] Indicates in the Remarks columns indicates parts that are supplied by **PAVCSG**.

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET & CHASSIS	
340	RD-DDTX002-V	TRAVERSE UNIT ASSY	[M] ⚠ *1
340	RD-DDTX004-V	TRAVERSE UNIT ASSY	[M] ⚠ *2
340-1	RMG0598A-K	FLOATING RUBBER	[M]
340-2	RML0727	SWITCH ROD	[M]
340-3	RMQ1635	MIDDLE CHASSIS	[M]
340-4	RMS0789	FIXED PIN	[M]
302	RDG0625	UD DRIVE GEAR	[M]
303	RDG0626	CAM GEAR	[M]
304	RDG0627	PULLEY GEAR	[M]
305	RDG0628	RELAY GEAR	[M]
306	RDG0629	CHANGE GEAR	[M]
307	RDG0630	OC DRIVE GEAR	[M]
308	RDV0078	BELT	[M]
309	RMCX0031-1	OC SPRING	[M]
310	RME0465	TRIGGER LINK SPRING	[M]
311	RME0466	TRAY STOPPER	[M]
312	RML0723	UD CONNECTION	[M]
313	RML0724	CHANGE ARM	[M]
314	RML0725	CHANGE LEVER	[M]
315	RML0731	TRIGGER LEVER	[M]
316	RML0732	ALL TRIGER LEVER	[M]
317	RML0733	SLIDER ARM	[M]
318	RML0734	OPEN SWITCH LEVER	[M]
319	RML0735	TRIGGER LINK LEVER	[M]
320	RML0736	TRAY LOCK LEVER	[M]
321	RMM0293	UD CAM L	[M]
322	RMM0294	UD CAM R	[M]
323	RMQ1629	TOP COVER	[M]
324	RMQ1632	PITCH PLATE	[M]
325	RMQ1636	TRIGGER SLIDER	[M]
326	RMQ1637	UD CAM LOCK	[M]
327	RMR1857-H	TRAY	[M]
328	RXG0062	OC ASSY	[M]
329	RXQ1568	MOTOR UNIT	[M]
330	RFKJAPM670K1	UD BASE ASSY	[M]
331	RDG0631	PLAY PINION	[M]
332	RME0464	SWITCH SLIDER SPRING	[M]
333	RML0726	LOAD LEVER	[M]
334	RML0728	SWITCH SLIDER	[M]
335	RMM0295	TRV SLIDE PLATE	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
336	RMM0296	SUB SLIDE PLATE	[M]
337	RMQ1634	LOAD PLATE	[M]
338	RXQ1571	CLAMP PLATE ASSY	[M]
339	XTN26+6GFJ	SCREW	[M]
341	RFKJAPM670K2	MECHA BASE ASSY	[M]
		PRINTED CIRCUIT BOARD	
PCB1	REP4321A	MECHA PCB UNIT	[M] (RTL)
		INTEGRATED CIRCUIT	
IC1	C0GAG0000007	IC MOTOR DRIVER	[M]
		PHOTO INTERRUPTERS	
Q1	B3NAA0000120	PHOTO INTERRUPTER	[M]
Q2	B3NAA0000120	PHOTO INTERRUPTER	[M]
Q3	B3NAA0000120	PHOTO INTERRUPTER	[M]
Q4	B3NAA0000120	PHOTO INTERRUPTER	[M]
Q5	B3NAA0000120	PHOTO INTERRUPTER	[M]
		CONNECTOR	
CN2	K1MN11BA0004	11P CONNECTOR	[M]
		SWITCH	
SW3	K0L1BA000134	TOP SWITCH	[M]
		WIRE	
J1	RWJ1106089XX	6P WIRE	[M]
		CAPACITORS	
C1	F1D1E103A001	0.01 25V	[M]
C2	F2A1C101A147	100 16V	[M]
		RESISTORS	
R1	D0AE181JA178	180	[M]
R2	D0AE241JA048	240	[M]

Note:

- *1 denotes models applied as below :-

  SA-PT660P/PC-K

  SA-PT760P/PC-K

  SA-PT960P/PC-K

SA-PT954P-K

- *2 denotes models applied as below :-
  SA-VK470EE/GC/GCS/GS/GCT-K
  SA-VK670EE/GC/GCS/GS/GCT-K
  SA-VK870EE/GC/GCS/GS-K